

# 39726603

ID 88049568

QH  
541.5  
1595  
A447  
1979

AMERICAN AG INTERNATIONAL'S DELIVERABLES  
RELATIVE TO

CONTRACT NO. NM-910-CT8-11

COLLECTION OF DATA AND PREPARATION OF  
ENVIRONMENTAL STATEMENT OF POTENTIAL  
ECOSYSTEM CHANGES ON STANDARD HABITAT SITES  
LAS CRUCES DISTRICT, BUREAU OF LAND MANAGEMENT

BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225

American Ag International, Inc.  
P.O. Box 12397  
Tucson, Arizona 85732

THE UNITED STATES OF AMERICA  
DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

TO: DIRECTOR, BLM  
FROM: [illegible]  
SUBJECT: [illegible]  
[illegible text follows]

DATE: [illegible]

CONFIDENTIAL

1. [illegible]  
2. [illegible]  
3. [illegible]

4. [illegible]

5. [illegible]

6. [illegible]

7. [illegible]

8. [illegible]

9. [illegible]

10. [illegible]

11. [illegible]

12. [illegible]

13. [illegible]

14. [illegible]

BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225



## INTRODUCTION

American Ag International, in accordance with BLM contract NM-910-RFP-25---  
COLLECTION OF DATA AND PREPARE ENVIRONMENTAL STATEMENT OF POTENTIAL ECOSYSTEM  
CHANGES ON STANDARD HADITAT SITES---has completed and is submitting all  
requested information.

Information included within this report is as follows:

- o A vertebrate species occurrence list by Standard Habitat Site (SHS).
- o A plant species list composed of approximately 90-95% of the plant species making up the plant composition of each SHS.
- o A chart depicting: (a) the key vertebrate species for each SHS and the anticipated population changes when influenced by different degrees of utilization for varying periods of time; and (b) the SHSs which may evolve from current SHSs when subjected to different degrees of utilization for varying periods of time.
- o Lists of the potential plant communities and species compositions for each SHS.
- o A bibliography of all references made during the process of the contract.

### A. VERTEBRATE SPECIES OCCURRENCE LIST BY STANDARD HABITAT SITE

This list includes species that are known to be present in the Las Cruces District, as well as species that may be present in the District, but as of yet have not been documented.

The SHSs in which species are found are indicated by numerals below the SHS column of the list. In addition to indicating the presence of the species in the SHSs, the numerals also reflect the relative quality of habitats provided by the SHSs for each species.

- o The numeral 1 represents the highest quality of habitat, while increasingly larger numerals represent relative decreases in habitat quality.
- o Since the population of a species is directly influenced by the quality of its habitat, these numerals should also be indicative of the relative populations of each species found in the SHSs (per given area).

Each species is listed by both its common and scientific name. Those species that were observed during the field inventory phase are denoted by an asterisk.

...in accordance with the contract between the American and International ...  
COLLECTION OF DATA AND PRELIMINARY ENVIRONMENTAL STATEMENT OF POTENTIAL IMPACTS

CHANGES ON ENVIRONMENTAL IMPACT STATEMENT - has completed and is submitting all

requested information.

Information furnished within this report is as follows:

- 1. A vegetation species inventory list by Standard Species List (SSL)
- 2. A plant species list composed of approximately 90-95% of the plant species existing in the plant community at each SSL.
- 3. A plant species list (a) the key vegetation species for each SSL and the associated species changes when influenced by different degrees of soil erosion for varying periods of time; and (b) the SSL which may involve from varying degrees of time.
- 4. A list of the potential plant communities and species composition for each SSL.
- 5. A bibliography of all references made during the process of the study.

A. VEGETATION SPECIES INVENTORY LIST BY STANDARD SPECIES LIST

This list includes species that are known to be present in the community. It also includes species that are known to be present in the community at the time of the study, as well as species that are known to be present in the community at the time of the study, as well as species that are known to be present in the community at the time of the study.

The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data.

and the SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data.

of the SSL, these numerical data are the SSL. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data. The SSL is which species are found and indicated by numerical data.



## B. PLANT SPECIES LISTS

In order to obtain a good sample of the plant species composing each SHS, it was necessary to first analyze the range site composition of each SHS. This was accomplished by analyzing more than twelve hundred 200 step-point transects that the BLM range crews had completed as of December 10, 1978. Information obtained from the step-point transects indicate that most of the SHSs are composed of several different range sites. In many instances these SHSs are a complex intermix of several different potential plant communities.

To determine the plant species composition of each SHS, AAI obtained crown cover data from twenty 200 step-point transects for each SHS. From the crown cover data, the percent composition of the species making up the SHS was derived. However, in order to obtain an accurate sample of the plant species composition for each SHS, it was necessary to select 20 transects which were composed of the same proportional percentage of range sites as was each SHS. For example:

The Larrea tridentata Hill SHS was found to be composed of 45% Igneous Hills and Mountain Range Site, 35% Limestone Hills Range Site, 10% Gravelly Sand Range Site, and 10% Gravelly Loam Range Site. Hence, of the twenty transects utilized to determine the species composition for the Larrea tridentata Hill SHS, 9 were selected from the Igneous Hills and Mountain Range Site, 7 from the Limestone Hills Range Site, 2 from the Gravelly Sand Range Site, and 2 from the Gravelly Loam Range Site.

Once the plant species compositions were determined for each SHS, those species that were found to compose from 90-95% of the total composition were utilized to develop the plant species lists.

- o It should be noted that even though the plant species compositions were determined, they are not listed on the plant species lists.

The percent compositions were not requested in the contract, hence were not included. The percent compositions were determined by AAI

In order to obtain a good sample of the plant species composition of each SRS, it was necessary to first analyze the range site composition of each SRS. This was accomplished by analyzing four to twelve hundred 100 step-point transects. Since the SRS range areas had completed as of December 10, 1975, before action obtained from the step-point transects indicated that most of the SRS are composed of several different range sites. In many instances these SRS are a complex mixture of several different potential plant communities.

To determine the plant species composition of each SRS, AAI obtained cover cover data from twenty 100 step-point transects for each SRS. From the cover cover data, the percent composition of the species within the SRS was derived. However, in order to obtain an accurate sample of the plant species composition for each SRS, it was necessary to select 30 transects which were composed of the same proportional percentage of range sites as was each SRS. For example:

The latter Gravelly Hill SRS was found to be composed of 45% Ignacius Hill and Mountain Range Sites, 35% Ignacius Hill Range Site, 10% Gravelly Sand Range Site, and 10% Gravelly Low Range Site. Hence, of the twenty transects utilized to determine the species composition for the latter Gravelly Hill SRS, 9 were selected from the Ignacius Hill and Mountain Range Sites, 7 from the Ignacius Hill Range Site, 1 from the Gravelly Sand Range Site, and 3 from the Gravelly Low Range Site.

Once the plant species compositions were determined for each SRS, those species that were found to compose from 90-95% of the total composition were utilized to develop the plant species lists.

It should be noted that even though the plant species compositions were determined, they are not listed on the plant species lists. The percent compositions were not requested in the contract, hence were not included. The percent compositions were determined by AAI



in order to establish the general makeup of the SHSs and to insure that a minimum of 90% of the total plant species composition was listed for each SHS. Should the BLM desire the percent compositions for the species composing each SHS, they may be derived from the "raw" data that was utilized by AAI during the process of the contract.

\* The relative percentages of range sites composing each SHS and the number of transects analyzed for crown cover within the range sites are listed in Appendix A.

\*\* The plant species lists for the Malpais SHS and the Riparian SHSs were developed from only 6 and 4 transects, respectively. Therefore, these lists are probably incomplete. However, these were all of the transects that had been run in these SHSs as of December 10, 1978.

### C. CHART

This chart depicts: (a) the key vertebrate species for each SHS and the anticipated population changes when influenced by different degrees of utilization for varying periods of time; and (b) the probable SHSs which will evolve from current SHSs when subjected to different degrees of utilization for various periods of time.

- a) Key vertebrate species were selected on the basis of three factors:
  - (1) limited tolerance to environmental change;
  - (2) limited distribution dependent on environmental factors; and
  - (3) declining population dependent on environmental factors.The particular factor(s) for which key species were selected are designated on the chart beside the common name of the key species. Population changes of the key species are indicated as: I - Increase in population; D - Decrease in population; S - Stable population; and N - Species no longer present.
- b) As the SHSs are composed of anywhere from one to eleven different

In order to establish the general makeup of the SHS and to insure that a minimum of 70% of the total plant species composition was listed for each SHS. Should the SHS have the percent composition for the species composition, they may be derived from the "raw" data that was utilized by AAI during the process of the contract.

\* The relative percentages of range sites comprising each SHS and the number of transects analyzed for crown cover within the range sites are listed in Appendix A.

\*\* The plant species lists for the Malpais SHS and the Riparian SHS were developed from only 8 and 4 transects, respectively. Therefore, these lists are probably incomplete. However, these were all of the transects that had been run in these SHSs as of December 10, 1978.

#### C. CHART

This chart depicts: (a) the key vertebrate species for each SHS and the anticipated population changes when influenced by different degrees of utilization for varying periods of time; and (b) the probable SHSs which will evolve from current SHSs when subjected to different degrees of utilization for various periods of time.

a) Key vertebrate species were selected on the basis of three factors: (1) limited tolerance to environmental change; (2) limited distribution dependent on environmental factors; and (3) declining populations dependent on environmental factors. The particular factor(s) for which key species were selected are designated on the chart beside the common name of the key species. Population changes of the key species are indicated as: I - Increase in population; D - Decrease in population; S - Stable population; and N - Species no longer present.

b) As the SHSs are composed of anywhere from one to eleven different



range sites the chart is actually a simplification of many very complex interacting factors. Since each of the range sites have different potentials, several different changes within each SHS are possible. Hence, this chart should be viewed with the thought in mind that not all possible changes are indicated on the chart, but rather that the changes indicated are those that are most likely to occur on the majority of each SHS.

In order to clarify the successional changes indicated on the chart, each SHS is discussed as follows;

1. Larrea tridentata Rolling Upland (Latr Rup)

According to Gardener (1951), much of the area within the Las Cruces District, which is presently occupied with creosotebush, was at one time a Plains Desert Grassland. It was predominantly a climax vegetation composed of black grama and its associates on the uplands, and tobosa and its associates in the shallow bottomland swales. This theory has also been supported by such noted ecologists as Clements (1934), Weaver and Clements (1938), and Clements and Sheldford (1939). Bases upon this concensus, areas now dominated by shrubs represent a grazing disclimax or stages in primary succession. Due to a combination of influencing factors, the return of such creosotebush invaded areas to climax grasslands will at best be a long and slow process. Factors working against the return of creosotebush areas to grassland are:

- o As areas are invaded by creosotebush the ground cover is greatly reduced, thereby allowing significant

range after the chart is actually a simplification of many very complex interacting factors. Since each of the range areas have different potentials, however, different changes within each are possible. Hence, this chart should be viewed with the thought in mind that not all possible changes are indicated on the chart, but rather that the changes indicated are those that are most likely to occur on the majority of each SWS.

In order to clarify the successional changes indicated on the chart, each SWS is discussed as follows:

1. Lower Tidal Flat (SWS 1)  
According to Gardner (1951), much of the area within the Las Cruces District, which is presently occupied with creosotebush, was at one time a Tidal Beach Grassland. It was predominantly a climax vegetation composed of black grama and its associates on the uplands, and rope and its associates in the shallow bottomland swales. This theory has also been supported by such noted ecologists as Clements (1934), Weaver and Clements (1938), and Clements and Shreve (1939). Bates upon this consensus, areas now dominated by shrubs represent a grazing climax or stages in primary succession. Due to a combination of influencing factors, the return of such creosotebush invaded areas to climax grasslands will at best be a long and slow process. Factors working against the return of creosotebush areas to grassland are:  
a. As areas are invaded by creosotebush the ground cover is greatly reduced, thereby allowing significant



increases in soil erosion. In many such areas, the soil surface has eroded to the extent that only the desert pavement remains. This creates an environment very inhospitable to the reestablishment of grass species.

- o Throughout the southwestern portion of New Mexico, precipitation is very sporadic and is more often than not unfavorable to the reestablishment of grass species.
- o Once an area has been invaded by shrubby species, competition from the invading shrubs greatly reduces the chances of grasses becoming reestablished.
- o Selective grazing habits of livestock.

The opportunity for creosote invaded areas to return to grasslands is remote unless the sites receive assistance from man through forms of mechanical disturbance and reseeding.

2. Larrea tridentata Breaks (Latr Brks)

Beck (1978) states that it is very unlikely that areas described as being part of the Latr Brks SHS will change significantly due to the excessive erosion incurred on the steeper slopes of this SHS. The original potential to produce grasses has been greatly reduced by the loss of substantial amounts of topsoil.

It was Gardener's hypothesis (1951) that creosotebush composed a major portion of the climax vegetation found along the gravelly ridges as encountered in the Latr Brks SHS.

This hypothesis can be further substantiated by the potential natural plant communities as described by the Soil Conservation Service (SCS) for the Gravelly Sand and Gravelly Range Sites (the range sites composing 78% of the Latr Brks SHS). The SCS has also designated creosotebush as composing a major portion of the climax vegetation of the plant community found in what has been designated as the Latr Brks SHS by the

invasions in soil erosion. In many such areas, the soil surface has eroded to the extent that only the desert pavement remains. This creates an environment very inhospitable to the reestablishment of grass species.

Throughout the southwestern portion of New Mexico, precipitation is very sporadic and is more often than not unfavorable to the reestablishment of grass species.

Once an area has been invaded by shrubby species, competition from the invading shrubs greatly reduces the chances of grasses becoming reestablished.

Selective grazing habits of livestock.

The opportunity for crocodiles invaded areas to return to grass-

lands is remote unless the alien species, assistance from

man through forms of mechanical disturbance and reseeding.

## 1. Factors Contributing to the Problem

Beck (1978) states that it is very unlikely that areas

designated as being part of the Lake Mead SWS will change

significantly due to the extensive erosion incurred on the

steep slopes of this SWS. The original potential to produce

grasses has been greatly reduced by the loss of substantial

amounts of topsoil.

It was Carlsman's hypothesis (1951) that crocodiles com-

posed a major portion of the climax vegetation found along

the gravelly ridges as encountered in the Lake Mead SWS.

This hypothesis can be further substantiated by the potential

natural plant communities as described by the Soil Conserv-

ation Service (SCS) for the Gravelly Sand and Gravelly

Sandy Sites (the range sites composing 78% of the Lake Mead

SWS). The SCS has also designated crocodiles as composing

a major portion of the climax vegetation of the plant community

found in what has been designated as the Lake Mead SWS by the



BLM. The dominance of creosotebush in the Latr Brks SHS climax vegetation as well as in its present condition would tend to indicate that this SHS is one with very little vegetative potential. The combination of the low vegetative potential with the excessive erosion that this SHS has been subjected to leads to the conclusion that the Latr Brks SHS will not change in aspect within the next one hundred years.

3. Larrea tridentata Hill (Latr Hill)

(See Larrea tridentata Rolling Upland for explanation).

4. Mixed Shrub Rolling Upland (Mxsh Rup)

Vegetation that is presently designated by the BLM as composing the Mxsh Rup SHS was at one time predominantly a Plains Desert Grassland (Buffington and Herbel, 1965 from research conducted on the Jornada Experimental Range). The present domination by shrubs represents a grazing disclimax or primary successional change. Research indicates that the vegetation composing the Mxsh Rup is presently on a downward successional trend. Buffington and Herbel found that many areas on the Jornada Experimental Range exhibited the following downward successional trends:

- o Plains Desert Grassland to mesquite-creosotebush type to a creosotebush type.
- o Plains Desert Grassland to tarbush type to creosotebush-tarbush type to a creosotebush type.
- o Plains Desert Grassland to tarbush-mesquite-creosotebush type to a creosotebush type.

As the intermediate vegetation types listed in the above downward successional sequence fit those of the Mxsh Rup SHS, it is highly probable that the Mxsh Rup SHS is moving toward

3. The dominance of *cruciferae* in the last 500 years is well as in its present condition. It would seem to indicate that this 500 is one with very little vegetative potential. The condition of the low vegetative potential with the excessive erosion that this 500 has been subjected to leads to the conclusion that the last 500 will not change in aspect within the next one hundred years.

### 3. Lower Tertiary Hill (Last Hill)

(See lower Tertiary Hilling Upland for explanation.)

### 4. Mixed Tertiary Hilling (Hill 500)

Vegetation that is presently designated by the 500 as consisting of the 500 is at one time predominantly a *cruciferae* *cruciferae* *cruciferae* (Bullington and Havel, 1955) type. Research conducted on the Tertiary Experimental Range. The present domination by shrubs represents a striking indication of primary successional change. Research indicates that the vegetation composing the 500 is presently on a downward successional trend. Bullington and Havel found that many areas on the Tertiary Experimental Range exhibit the following downward successional trends:

- a. *cruciferae* *cruciferae* to *cruciferae* *cruciferae* type to a *cruciferae* type.
- b. *cruciferae* *cruciferae* to *cruciferae* type to *cruciferae* type.
- c. *cruciferae* *cruciferae* to *cruciferae* *cruciferae* type.

As the intermediate vegetation types listed in the above downward successional sequence fit those of the 500, it is highly probable that the 500 is moving toward



a predominantly creosotebush vegetation type. Under BLM classification this would be equivalent to the *Larrea tridentata* Rolling Upland SHS.

The period of time required for the Mxsh Rup SHS to regress to a Latr Rup SHS would be primarily dependent upon 2 factors: (1) the present relative condition of the plant community composing the Mxsh Rup SHS in relation to climax vegetation; and (2) the intensity of grazing to which areas within the Mxsh Rup SHS are subjected to.

- o As different areas within the Mxsh Rup SHS are in different relative conditions, some areas will regress to a creosotebush vegetation type sooner than others. It may take an area in very poor condition only 20 years to reach a creosotebush vegetation type, whereas an area in good condition may take more than a hundred years.
- o If an area is grazed heavily, the downward trend will be greatly enhanced and less time will be required to regress to the creosotebush vegetation type. If however, an area is rested or only lightly grazed, the present vegetation may stabilize, eventually reverse its trend, and return to a grassland. In some cases, if the relative condition of the plant community is poor and much of the topsoil has eroded, the area may continue to regress until reaching a creosotebush vegetation type, even if the area is given complete rest from grazing.
- o Additional significant influencing factors are the soil texture and depth, and its erodibility and the distance from the seed source of the invading species, and the precipitation pattern in the area.

The return of shrub invaded areas within the Mxsh Rup SHS to the climax vegetation of a Plains Desert Grassland may take several hundred years. As forementioned, this long, slow process will be greatly affected by the degree of utilization of plant species and the present relative condition of the plant community in relation to climax

a predominantly creosotebush vegetation type. Under this

classification this would be equivalent to the latter

vegetation being found.

The period of time required for the shrub to regress

to a fast regrowth would be primarily dependent upon the

cover: (1) the present relative condition of the plant com-

munity composing the shrub regrowth in relation to climate

vegetation; and (2) the intensity of grazing to which areas

within the shrub regrowth are subjected to.

As different areas within the shrub regrowth are in different relative conditions, some areas will regress to a creosotebush vegetation type sooner than others. It may take an area in very poor condition only 10 years to reach a creosotebush vegetation type, whereas an area in good condition may take more than a hundred years.

If an area is grazed heavily, the downward trend will be greatly enhanced and less time will be required to regress to the creosotebush vegetation type. If, however, an area is grazed or only lightly grazed, the present vegetation may stabilize, eventually reverting to a grassland, and return to a grassland. In some cases, if the relative condition of the plant community is poor and much of the topsoil has eroded, the area may continue to regress until reaching a creosotebush vegetation type, even if the area is given complete rest from grazing.

Additional significant influencing factors are the soil texture and depth, and its erodibility and the distance from the seed source of the invading species, and the present vegetation pattern in the area.

The return of shrub invaded areas within the shrub regrowth

to the climax vegetation of a Plains Desert Grassland may

take several hundred years. As mentioned, this long

slow process will be greatly affected by the degree of

utilization of plant species and the present relative

condition of the plant community in relation to climate



vegetation. Additional retarding factors are low and sporadic rainfall, the loss of topsoil to erosion, the extra competition from woody species presently dominating the area, selective grazing by livestock, and pressure exerted by small mammals and rodents. However, the time required for the Mxsh Rup SHS to return to a grassland can be greatly reduced by the removal of competing woody species.

5. Mixed Shrub Hills (Mxsh Hills)

(See Mixed Shrub Rolling Upland for explanation).

6. Mixed Shrub Mountain (Mxh Mtn)

The potential plant communities as described by the SCS for the Igneous Hills and Mountains, and Limestone Hills Range Sites (the range sites composing 85% of the Mxsh Mtn SHS), indicate that woody species compose approximately 15-25% of the total climax vegetation and grasses from 60-75%. However, data from the analyzation of twenty BLM 200 step-point transects shows that woody species presently compose approximately 50% and grasses only 45% of the vegetation in the Mxsh Mtn SHS. The increase of woody species and decrease of grass species is a result of three main factors:

- o Selective grazing of grass species by livestock favors the growth of woody species over grass species;
- o Once woody species have become established they compete more effectively for the limited moisture than grass species in the semi-arid climate of southwestern New Mexico;

vegetation. Additional retarding factors are low and sporadic rainfall, the loss of species to erosion, the entry competition from woody species presently dominating the area, selective grazing by livestock, and pressure exerted by small mammals and rodents. However, the time required for the Marsh Sup 385 to return to a grassland can be greatly reduced by the removal of competing woody species.

### 3. Mixed Shrub Hills (Marsh Hills)

(See Mixed Shrub Rolling Upland for explanation.)

### 4. Mixed Shrub Mountains (Marsh Mtn)

The potential plant communities as described by the SCS for the Llanos Hills and Mountains, and Llanos Hills Range Sites (the range sites comprising 83% of the Marsh Mtn 385), indicate that woody species compose approximately 15-25% of the total climax vegetation and grasses from 60-75%. However, data from the analysis of twenty 200 step-point transects shows that woody species presently compose approximately 30% and grasses only 45% of the vegetation in the Marsh Mtn 385. The increase of woody species and decrease of grass species is a result of three

#### main factors:

- a. Selective grazing of grass species by livestock favors the growth of woody species over grass species;
- b. Once woody species have become established they compete more effectively for the limited moisture than grass species in the semi-arid climate of southwestern New Mexico;



- o In the past fire played a key role in the control of woody species in grasslands. The suppression of grassland fires has allowed the invasion of woody species on grasslands to progress unchecked.

Most areas presently occupied with good stands of woody species will not revert back to what was predominantly a grassland unless subjected to such outside forces as mechanical manipulation or periodic fires. This is true even under the influence of very light or no grazing, as the woody species are too strongly established to be crowded out by grass species.

If the Mxsh Mtn SHS is subjected to long periods of overgrazing, grass species will gradually compose less and less of the total plant community composition and woody species more. However, the plant community would still be classified as a Mxsh Mtn SHS.

#### 7. Half-Shrub Rolling Upland (Hash Rup)

Analyzation of twenty BLM 200 step-point transects from the Hash Rup SHS indicates that snakeweed composes 42.1% of the plant community, mesquite 10.6%, fluffgrass 8.8%, and black grama 3.5%. Hence, it would appear that a typical area within the Hash Rup SHS would exhibit a dominant aspect of snakeweed and scattered mesquite, underlain with a sparse understory of fluffgrass and black grama.

Donart (1978) in performing research on snakeweed has found it to be a very opportunistic plant. He reports that snake-  
weed is dominant in grasslands only after competing grasses have been weakened and ground cover reduced. This may be caused by extended periods of overgrazing, by drought, or by a combination of such influences.

In the past five years a hay field in the coastal  
of woody species in grasslands. The suggestion  
of grassland fires has allowed the invasion of  
woody species on grasslands to progress unchecked.

Most areas presently occupied with grass and woody  
species will not revert back to what was predominantly a  
grassland unless subjected to such outside forces as mech-  
anical manipulation or periodic fires. This is true even  
under the influence of very light or no grazing, as the  
woody species are too strongly established to be crowded  
out by grass species.

If the Marsh Run SWS is subjected to long periods of over-  
grazing, grass species will gradually compose less and less  
of the total plant community composition and woody species  
more. However, the plant community would still be classi-  
fied as a Marsh Run SWS.

#### V. Half-Shrub Rolling Plains (Marsh Run)

Analysis of twenty 100 step-point transects from  
the Marsh Run SWS indicates that shrub-covered species 4.1%  
of the plant community, mesquite 10.6%, flouregass 8.8%,  
and black grass 7.5%. Hence, it would appear that a typi-  
cal area within the Marsh Run SWS would exhibit a dominant  
aspect of mesquite and scattered species, underlain with  
a sparse understory of flouregass and black grass.  
Bonnart (1978) in performing research on mesquite has found  
it to be a very opportunistic plant. He reports that mes-  
quite is dominant in grasslands only after competing grasses  
have been weakened and ground cover reduced. This may be  
caused by extended periods of overgrazing, by drought, or  
by a combination of such influences.



- o Ideal conditions for the encroachment of snake-weed appear to be very droughty summers, which serve to reduce grass ground cover, followed by moist falls. Donart's research has found high correlations between such climatic patterns and the establishment of new snakeweed colonies the following spring and summer.

Snakeweed presence is very cyclic in nature. It is susceptible to drought and in addition, Rootbore. Rootbore is the name given to a small grub that attacks the roots of snakeweed plants; the end result being death of the plant. Such attacks often completely decimate snakeweed colonies within the course of a summer.

Since snakeweed occurrence is cyclic in nature, it may often disappear from the plant community for short periods of time, thereby, converting many areas within the Hash Rup SHS, which have also been invaded by mesquite; into a Prosopis Juliflora Rolling Upland SHS. In areas within the Hash Rup SHS that have not been invaded by mesquite, the disappearance of snakeweed combined with years of favorable precipitation may result in the conversion of the area back to a grassland. However, once an area has been invaded by both snakeweed and mesquite, it is very doubtful that the area will revert back to a grassland even under complete rest. Research by Norris (1950) on snakeweed-mesquite types indicates that grazing pressure exerted by rodents and rabbits alone will prevent vegetation improvement. Wright (1960) in performing research on the New Mexico Agricultural Experiment Station Ranch, found that crown spread of mesquite increased under complete protection as well as under livestock use. Hence, it would appear that even under complete rest, areas

Ideal conditions for the establishment of snakes-  
need appear to be very strongly summer, which serves  
to reduce grass ground cover, followed by moist fall.  
Donner's research has found high correlations between  
such climatic patterns and the establishment of new  
snakehead colonies the following spring and summer.

Snakehead presence is very cyclic in nature. In the summer  
reptiles are brought and in addition, hantavirus. Snakeheads  
is the name given to a small group that attacks the roots  
of snakehead plants; the end result being death of the  
plant. Such attacks often completely decimate snakehead  
colonies within the course of a summer.

Since snakehead occurrence is cyclic in nature, it may often  
disappear from the plant community for short periods of time.  
Theoretically, converting many areas within the Bushy 2MS, which  
have also been invaded by mesquite; into a Prosopis juliflora  
Rolling Upland 2MS. In areas within the Bushy 2MS that

have not been invaded by mesquite, the disappearance of  
snakehead combined with years of favorable precipitation may  
result in the conversion of the area back to a grassland.  
However, once an area has been invaded by both snakehead  
and mesquite, it is very doubtful that the area will revert  
back to a grassland even under complete rest. Research by  
Norton (1950) on snakehead-mesquite types indicates that  
grazing pressure exerted by rodents and rabbits alone will  
prevent vegetation improvement. Wright (1950) in performing  
research on the New Mexico Agricultural Experiment Station  
found that cover spread of mesquite increased under  
complete protection as well as under livestock use. Hence,  
it would appear that even under complete rest, areas



dominated by both snakeweed and mesquite will continue on a downward successional trend. According to research by Buffington and Herbel (1965) this downward trend could bottom out at a creosote-bush dominated vegetation type, or under extended heavy use, the areas having sandy textured soils could regress to what the BLM has designated as a Prosopis Juliflora Dunes SHS.

8. Grass Rolling Upland (Grass Rup)

As the Plains Desert Grassland is the climax vegetation for the majority of the area around Las Cruces (Gardener 1951), there should be no significant change in the aspect of the Grass Rup SHS if grazed only lightly or moderately. However, if the Grass Rup SHS is grazed heavily, grass species will be weakened and/or die, and total ground cover will be reduced. This will allow for opportunity of invasion by such noxious woody species as snakeweed, tarbush, mesquite and creosotebush.

- o The particular species invading an area will depend upon a variety of factors, including soil type and texture of the particular site being invaded, and accessibility of the invading species' seed source to the area.
- o Under the influence of heavy grazing different areas within the Grass Rup SHS could regress to the Hash Rup SHS, the Prju Rup SHS, the Mxsh Rup SHS or the Latr Rup SHS. Under extended heavy use, areas composed of sandy textured soils invaded by mesquite could further regress to a Prju Dunes SHS.

9. Grass Hills

As with the Grass Rup SHS, the Grass Hills SHS should not change significantly in aspect over the next one hundred years if protected from grazing or if grazed only moderately.

dominated by both unshaded and shaded will continue on a downward successional trend. According to research by Haffington and Haffington (1983) this downward trend could bottom out at a xerophilic-shrub dominated vegetation type, or under extended heavy use, the area having sandy soil could regress to what the SLM has designated as a xerophilic shrub dominated Dunes SWS.

#### 8. Grass Rolling (Grass SWS)

As the Plains Desert Grassland is the climax vegetation for the majority of the area around Las Cruces (Gardner 1991), there should be no significant change in the aspect of the Grass SWS if grazed only lightly or moderately. However, if the Grass SWS is grazed heavily, grass species will be weakened and/or die, and total ground cover will be reduced. This will allow for opportunity of invasion by such xerophilic woody species as mesquite, carob, and acacia.

The particular species invading an area will depend upon a variety of factors, including soil type and content of the particular site being invaded, and accessibility of the invading species' seed source to the area.

Under the influence of heavy grazing different areas within the Grass SWS could regress to the Bush SWS, the Pine SWS, the Mesquite SWS, or the Shrub SWS. Under extended heavy use, areas composed of sandy textured soils invaded by mesquite could further regress to a Pine SWS.

#### 9. Grass Hills

As with the Grass SWS, the Grass Hills SWS should not change significantly in aspect over the next one hundred years if protected from grazing or if grazed only moderately.



However, if influenced by extended periods of heavy grazing, the Grass Hills SHS would be invaded by a variety of noxious woody species. Specific sites within the Grass Hills SHS would be affected differently, but would probably regress to one of three possible SHS's.

- o Areas of lowest potential would regress to a predominantly creosotebush vegetation type, or to the equivalent of a Latr Hills SHS. These lower potential areas will generally be encountered at the lower elevations as influenced by lower and more sporadic annual precipitation.
- o The majority of the Grass Hills SHS would probably be taken over by a mixture of woody species composed predominantly of snakeweed, mariola, creosotebush, feather dalea, mesquite, and juniper. These species already compose a significant portion of the plant community of the Grass Hills SHS. Hence, as time passed and grass species were reduced in density by heavy grazing, the woody species would gradually increase in density and eventually form a new plant community. Such a plant community would project the aspect of a Mxsh Hills SHS.
- o A small portion of the Grass Hills SHS would convert to a pinyon-juniper vegetation type. As pinyon and juniper trees require more precipitation, this change would occur only in the hills found in the higher elevations and predominantly in the northwest portion of the Las Cruces District.

10. Grass Mountains (Grass Mts)

As with the Grass Rup SHS and the Grass Hills SHS, the aspect of the Grass Mtn SHS should not change significantly within the next one hundred years unless subjected to extended periods of heavy grazing.

In areas found within the northwest portion of the Las Cruces District, extended overgrazing may result in the invasion of mountain grasslands by pinyon and juniper trees. It has been found that as grass stands are weakened from

However, it is indicated by extended periods of heavy grazing, the Grass Hills SWS would be invaded by a variety of woody species. Specific sites within the Grass Hills SWS would be affected differently, but would probably regress

to one of three possible SWS's.

o Areas of lowest potential would regress to a predominantly treeless vegetation type, or to the equivalent of a Low Hills SWS. These lower potential areas will generally be encountered at the lower elevations as indicated by lower and more sporadic annual precipitation.

o The majority of the Grass Hills SWS would probably be taken over by a mixture of woody species composed predominantly of shrubs, mallee, and juniper. These species already compose a significant portion of the plant community of the Grass Hills SWS. Hence, as time passed and grass species were reduced in density by heavy grazing, the woody species would gradually increase in density and eventually form a new plant community. Such a plant community would project the aspect of a Bush Hills SWS.

o A small portion of the Grass Hills SWS would convert to a juniper-jamper vegetation type. As juniper and jamper trees require more precipitation, this change would occur only in the hills found in the higher elevations and predominantly in the northwest portion of the Las Cruces District.

#### 10. Grass Mountain (Grass Hills)

As with the Grass Run SWS and the Grass Hills SWS, the aspect of the Grass Mtn SWS should not change significantly within the next one hundred years unless subjected to extended periods of heavy grazing. In areas found within the northwest portion of the Las Cruces District, extended overgrazing may result in the invasion of mountain grasslands by juniper and jamper trees. It has been found that as grass stands are weakened from



heavy grazing, they are no longer able to compete with invading juniper seedlings (Springfield 1976). In addition, the increased number of juniper trees brought about by overgrazing produces a faster rate of juniper seedling germination through the dissemination of seeds by animals. Juniper seeds from animal droppings have been found to germinate faster (Johnsen 1962).

In the largest portion of the Las Cruces District, the Grass Mtn SHS would be expected to regress to a Mxsh Mtn SHS if subjected to extended periods of heavy grazing. The dominant woody species encountered in this SHS would be mariola, snakeweed, creosotebush, mesquite, juniper, spicebush, and Apache plume.

#### 11. Grass Flat

As with the previously discussed grass dominated SHSs, the Grass Flat SHS will not appreciably change in appearance unless overgrazed for an extended period of time.

Initial influences of overgrazing of the Grass Flat SHS would lead in most instances to an invasion by snakeweed, creating a half-shrub vegetation aspect. Continued overgrazing of the Grass Flat SHS would lead to increased invasion by mesquite or creosotebush, or a mixture of tarbush, mesquite, and creosotebush. Such vegetative aspects would be typical of Prju, Latr, and Mxsh SHSs respectively. In general, the Grass Flat SHS follows the same successional pattern as the Grass Rup SHS.

heavy grazing. They are no longer able to compete with  
invasive juniper seedlings (Springfield 1975). In addi-  
tion, the increased number of juniper trees brought about  
by overgrazing produces a faster rate of juniper seedling  
germination through the dissemination of seeds by animals.  
Juniper seeds from animal droppings have been found to  
germinate faster (Johnson 1982).

In the largest portion of the Las Cruces District, the  
Grass Mtn SWS would be expected to regress to a Kuch Mtn  
SWS if subjected to extended periods of heavy grazing.  
The dominant woody species encountered in this SWS would be  
mesquite, arborescent, creosotebush, mesquite, juniper, spic-  
ebush, and Apache pine.

## 11. Grass Flat

As with the previously discussed grass dominated SWS,  
the Grass Flat SWS will not appreciably change in appear-  
ance unless overgrazed for an extended period of time.  
Initial influences of overgrazing of the Grass Flat SWS  
would lead to most instances to an invasion by mesquite,  
creating a half-shrub vegetation aspect. Continued over-  
grazing of the Grass Flat SWS would lead to increased in-  
vasion by mesquite or creosotebush, or a mixture of the  
two, mesquite, and creosotebush. Such vegetative aspects  
would be typical of the last, and Kuch SWS respectively.  
In general, the Grass Flat SWS follows the same successional  
pattern as the Grass Mtn SWS.



- \* In the previous discussion and also on the chart, it is not indicated that the Grass Flat SHS will change to a Hash Flat, Prju Flat, Latr Flat, or Mxsh Flat SHS. Instead, only the changes in vegetative aspect were indicated. This is due to the fact that no Hash Flat, Prju Flat, Latr Flat, or Mxsh Flat SHSs have been designated within the current BLM SHS classification system.

## 12. Malpais

Under the current BLM classification system, the SHSs are in most instances classified on the basis of the aspect of the present vegetation and the general landform. The exception to this approach being the Malpais SHS, which has been so classified on the basis of the rock, malpais. As rocks are not greatly influenced by grazing, this SHS will in most likelihood remain forever a Malpais SHS.

- o In the present subclimax state the Malpais SHS plant community is composed of 55% woody species, 44% grass species and 1% forbs. Dominant woody species are snakeweed, shrubby buckwheat, creosotebush, and mesquite. The most frequently encountered grass species are black grama and tobosa. In comparison, the SCS has described the potential natural plant community for the Malpais Range Site as being composed of 65-75% grasses, 15-20% woody species and 3-5% forbs.

- \* It should be noted that of the twelve hundred BLM range transects analyzed, only six were designated as being of the Malpais SHS. This would tend to indicate that this SHS composes a very small area within the District. If this is true, it may be better to lump the Malpais SHS with another of the SHS's.

## 13. Prosopis juliflora (Rolling Upland (Prju Rup))

Much of the area now dominated by mesquite is actually a grazing disclimax which under climax conditions had been a Plains Desert Grassland. The presence of mesquite may represent an intermediate stage of regression between a grassland and a creosotebush vegetation type. If subjected

\* In the previous discussion and also on the chart, it is not indicated that the Grass Site will change to a Bush Site, or vice versa. However, only the changes in vegetation aspect were indicated. This is due to the fact that no Bush Site, or vice versa, or vice versa, have been designated within the current SLM classification system.

## 11. Malpais

Under the current SLM classification system, the SLMs are in most instances classified on the basis of the aspect of the present vegetation and the general landscape. The exception to this approach being the Malpais SLM, which has been so classified on the basis of the rock, malpais. As rocks are not greatly influenced by grazing, this SLM will in most likelihood remain forever a Malpais SLM.

In the present subsection under the Malpais SLM plant community is composed of 222 woody species, 442 grass species and 12 forbs. Dominant woody species are shrubs, shrubby perennials, creosote-bush, and mesquite. The most frequently encountered grass species are black grass and rosette. In comparison, the SLM has described the potential natural plant community for the Malpais range site as being composed of 65-75 grasses, 15-20 woody species and 5-10 forbs.

\* It should be noted that of the twelve hundred SLM range transects analyzed, only six were designated as being of the Malpais SLM. This would tend to indicate that this SLM comprises a very small area within the District. If this is true, it may be better to lump the Malpais SLM with another of the SLM's.

## 12. Prosopis juliflora (Silene) (Tree Sage)

Much of the area now dominated by mesquite is actually a grazing situation which under other conditions had been a Pinal Desert Grassland. The presence of mesquite may represent an intermediate stage of vegetation between a grassland and a creosotebush vegetation type. It is subject



to extremely heavy grazing pressure, this site may further regress to a mesquite dunes type.

Extensive research has been done on the effects of mesquite invasion of desert grasslands. In general, such research has found that once mesquite has become established, it can only be removed through the implementation of a mechanical or chemical treatment program. In many instances, research has found that mesquite actually increases more on protected range than on range that is grazed (Glendening 1952).

This tends to indicate a continuous regression of the plant community under complete protection from grazing, as well as under moderate and heavy grazing.

How fast and to what extent an area will regress is dependent upon several factors:

- 1) the present relative condition of the plant community in relation to climax vegetation;
- 2) the intensity of grazing the area is subjected to;
- 3) the soil texture and depth;
- 4) the distance from the seed source of the invading species;
- 5) the reliability of the precipitation in the area.

#### 14. Prosopis juliflora Dunes (prju Dunes)

The mesquite dunes appear to be the result of extreme overgrazing and are frequently found in areas which have been subjected to heavy livestock concentrations (Campbell 1929).

A classic example of such an area is the "Camino Real", a trail from Chihuahua, Mexico to Santa Fe, New Mexico which traversed the Jornada Plain. In the early 1800's great herds of sheep, goats, cattle, and horses were driven along

an extremely heavy grazing pressure, this also may further regress to a sandpile dune type.

Extensive research has been done on the effects of mesquite invasion of desert grasslands. In general, such research has found that once mesquite has become established, it can only be removed through the implementation of a mechanical or chemical treatment program. In many instances, research has found that mesquite actually increases more on protected range than on range that is grazed (Olson et al. 1952).

This tends to indicate a continuous regression of the plant community under complete protection from grazing, as well as under moderate and heavy grazing.

Now last and to what extent an area will regress is dependent upon several factors:

- 1) the present relative condition of the plant community in relation to climax vegetation;
- 2) the intensity of grazing the area is subjected to;
- 3) the soil texture and depth;
- 4) the distance from the seed source of the invading species;
- 5) the reliability of the precipitation in the area.

#### 14. Prosopis juliflora Dunes (Fort Huachuca)

The mesquite-dunes appear to be the result of extreme overgrazing and are frequently found in areas which have been subjected to heavy livestock concentrations (Campbell 1959).

A classic example of such an area is the "Cajon Real", a trail from Chihuahua, Mexico to Santa Fe, New Mexico which traversed the Jornada Plain. In the early 1800's great herds of sheep, goats, cattle, and horses were driven along



this trail. As a result, the trail can be easily located today due to the presence of mesquite dunes.

Under the influence of all degrees of grazing the Prju Dunes SHS will remain dominated by mesquite dunes. Even if protected from grazing, the mesquite dunes will not change appreciably for a long period of time. This can be documented by an exclosure on the Jornada Experimental Range which had originally been established in 1931 on a mesquite dune and black grama grassland transitional area. After 34 years of protection from grazing the mesquite dunes had taken over the entire exclosure and advanced out onto what had previously been adjoining grasslands.

15. Pinyon-Juniper (P-J)

Many areas presently occupied by pinyon-juniper vegetation are the result of the invasion of grassland communities by pinyon and/or juniper trees (Springfield 1976). With the introduction of livestock, many grasslands were overgrazed. Grass stands were weakened to the extent they could no longer compete with invading tree seedlings. Additionally, the grass was no longer thick enough to carry fire, which had prior to the introduction of livestock periodically swept across ranges and killed many trees. The combination of overgrazing and absence of fires not only allowed the encroachment of trees upon grasslands, but also allowed original stands of trees to become thicker (Parker 1945). A third factor related

this trail. As a result, the trail can be easily located today due to the presence of mesquite dunes. Under the influence of all degrees of grazing the dunes will remain dominated by mesquite dunes. Even if protected from grazing, the mesquite dunes will not change appreciably for a long period of time. This can be documented by an enclosure on the Jornada Experimental Range which had originally been established in 1931 on a mesquite dune and black grama grassland transitional area. After 34 years of protection from grazing the mesquite dunes had taken over the entire enclosure and advanced out onto what had previously been adjoining grasslands.

#### 12. Pinon-Juniper (P-J)

Many areas presently occupied by pinon-juniper vegetation are the result of the invasion of grassland communities by pinon and/or juniper trees (Savill 1976). With the introduction of livestock, many grasslands were overgrazed. Grass stands were weakened to the extent they could no longer compete with invading tree seedlings. Additionally, the grass was no longer thick enough to carry fire, which had prior to the introduction of livestock periodically swept across ranges and killed many trees. The combination of overgrazing and absence of fires not only allowed the encroachment of trees upon grasslands, but also allowed original stands of trees to become thicker (Parker 1965). A third factor related



to the increase in the number of trees was the dissemination of juniper seeds by such animals as coyotes, birds, deer, and livestock. It has been determined that juniper seeds disseminated through animal droppings, germinate faster than naturally dispersed seed (Johnsen 1962).

The impacts of grazing upon grass species in a P-J vegetation type vary according to species, density of tree stands, elevation, precipitation, and soil texture and depth. A dense tree overstory may prevent any noticeable changes in the understory.

- o Research in New Mexico by Springfield in 1959 found that after 10 to 14 years of protection from grazing, changes in herbaceous cover were negligible where the tree canopy exceeded 30 percent. It was found in the same study that where tree canopy cover was less than 20 percent, production of perennial grasses improved substantially.
- o Other studies in southern New Mexico have found that perennial grass species production improves when pinyon-juniper stands are protected from grazing (Pieper in 1968, and Potter and Krenetsky in 1967).

However, even with improvements in grass stands, there still remains a pinyon-juniper aspect. The only means by which this aspect can be changed is through the mechanical removal of trees, or through a long, slow successional process in which fire would play an important role. Either process would result in a vegetation type similar to the Grass Mtn or the Grass Hill SHS.

to the increase in the number of trees was the dissemination of juniper seeds by such animals as coyotes, birds, deer, and livestock. It has been determined that juniper seeds disseminated through animal droppings, germinate faster than naturally dispersed seed (Johnson 1963).

The impact of grazing upon grass species in a P-1 vegeta-  
tion type varies according to species, density of trees  
stands, elevation, precipitation, and soil texture and  
depth. A dense tree overstory may prevent any noticeable  
changes in the understory.

Research in New Mexico by Sprinkle et al. (1959) found that after 10 to 14 years of protection from grazing, changes in herbaceous cover were negligible where the tree canopy exceeded 50 percent. It was found in the same study that where tree canopy cover was less than 50 per-  
cent, production of perennial grasses improved substantially.

Other studies in southern New Mexico have found that perennial grass species production improved when juniper stands are protected from grazing (Parker in 1968, and Foster and Kennedy in 1967).

However, even with improvements in grass stands, there still remains a juniper-juniper aspect. The only means by which this aspect can be changed is through the mechanical removal of trees, or through a long, slow successional process in which fire would play an important role. Either process would result in a vegetation type similar to the

Grass Hills on the Grand Hill Mts.



16. Pseudoriparian (Pseudo)

The Pseudoriparian SHS is the designation that has been given to the vegetation types that are encountered in and along dry washes. Data from BLM range transects indicate that the Pseudoriparian SHS is dominated by a mixture of woody species with a sparse understory of grass species.

Plant species composition is extremely variable from one area of the Las Cruces District to another. In general, this is due to the variety of vegetation types found within the District. As dry washes occur in all vegetation types, there are several different plant communities composing the Pseudoriparian SHS. Since the designation of the Pseudoriparian SHS is based upon the fact that it is located in a dry wash, this SHS will not evolve or regress into another SHS unless the course of the wash changes. Hence, the Pseudoriparian SHS will remain a Pseudoriparian SHS simply because grazing, in the short term, will not effect a wash to such a degree that it will no longer be a wash.

17. Riparian

The Riparian SHS forms a unique and complex vegetative community. Similar to the Pseudoriparian SHS, it is characterized by a great deal of variety in species composition from one area of the District to another.

In order to reduce the great variety in species composition and to allow for more specific selection of key

16. Pseudotsuga (Pseudotsuga)

The Pseudotsuga 282 is the designation that has been given to the vegetation types that are encountered in and along dry washes. Data from BLM range transcripts indicate that the Pseudotsuga 282 is dominated by a mixture of woody species with a sparse understory of grass species. Plant species composition is extremely variable from one area of the Las Cruces District to another. In general, this is due to the variety of vegetation types found within the District. As dry washes occur in all vegetation types, there are several different plant communities comprising the Pseudotsuga 282. Since the designation of the Pseudotsuga 282 is based upon the fact that it is located in a dry wash, this 282 will not evolve or regress into another 282 unless the course of the wash changes. Hence, the Pseudotsuga 282 will remain a Pseudotsuga 282 simply because growing in the same area, will not effect a wash to such a degree that it will no longer be a wash.

17. Alpina

The Alpina 282 forms a unique and complex vegetative community. Similar to the Pseudotsuga 282, it is characterized by a great deal of variety in species composition from one area of the District to another. In order to reduce the great variety in species composition and to allow for more specific selection of key



vertebrate species for the Riparian SHS, AAI has subdivided the Riparian SHS into Riparian Deciduous Forest and Riparian Deciduous Woodland classifications. The Riparian Deciduous Forest corresponds to a sycamore-cottonwood-walnut vegetation association, whereas the Riparian Deciduous Woodland is composed primarily of a mesquite-seep willow-salt cedar-willow vegetation association.

The subdivision of the Riparian SHS has allowed for the specific selection of key vertebrate species which are primarily encountered in only the Riparian Deciduous Forest or the Riparian Deciduous Woodland. As both types of riparian habitat occur within the Las Cruces District, the subdivision of the Riparian SHS was felt to be necessary.

No successional changes were indicated as occurring for either the Riparian Deciduous Forest or Woodland under any degrees of utilization. This is not meant to imply that changes are not possible. For it is possible that a spring or seep fed riparian area could be destroyed by extreme livestock concentrations. But, in order to determine which riparian areas would be affected by heavy livestock use, and to which specific SHS the affected areas would evolve to, it would require that each riparian area be individually studied.

vertebrate species for the Alaskan FWS. All has sub-  
divided the Alaskan FWS into Alaskan Deciduous Forest  
and Alaskan Deciduous Woodland classifications. The  
Alaskan Deciduous Forest corresponds to a synanthropic  
forest-wilderness vegetation association, whereas the  
Alaskan Deciduous Woodland is composed primarily of a  
mesophytic-willow-wetland vegetation association.

The subdivision of the Alaskan FWS has allowed for the  
specific selection of key vertebrate species which are  
primarily encountered in only the Alaskan Deciduous  
Forest or the Alaskan Deciduous Woodland. As such types  
of riparian habitat occur within the Las Cruces District,  
the subdivision of the Alaskan FWS was felt to be necessary.

No successional changes were indicated as occurring for  
either the Alaskan Deciduous Forest or Woodland under any  
degree of utilization. This is not meant to imply that  
changes are not possible. For it is possible that a  
spring or creek bed riparian area could be destroyed by  
extreme livestock concentrations. But, in order to deter-  
mine which riparian areas would be affected by heavy live-  
stock use, and to which specific FWS the affected areas  
would evolve to, it would require that each riparian area  
be individually studied.



18. Stockpond

No successional changes indicated.

D. POTENTIAL NATURAL PLANT COMMUNITIES

Section 3.2 of the contract requests a concise description of the succession expected to occur by percent composition of dominant plant species. In order to comply with this request, a list of the potential plant species and their relative percent compositions was developed for each SHS.

The lists were developed by first determining the number of range sites composing each SHS and the relative percentage of the SHS that each range site composed. Then, by utilizing a weighted average based upon the relative percent each range site composed of each SHS, and the descriptions of the potential natural plant communities for each range site as established by the Soil Conservation Service, a list of the potential dominant plant species and their relative percent compositions was developed for each SHS.

It should be noted that these lists are reflective of the potential of the SHSs. In many instances, this potential will not be attained within fifty or even one hundred years, but may require several hundred years to be reached.

- \* A list was not developed for the Riparian SHS; as there is too much variability found within the different plant communities forming the Riparian SHSs. The Riparian areas throughout the District have in many cases, distinctly different vegetative potentials which cannot be combined into one list which adequately describes the potential plant community for the Riparian SHS. A separate list would have to be developed for each different riparian area within the District. This would be extremely time consuming and would require much more field analysis and data collection.

No substantial changes indicated.

#### B. POTENTIAL NATURAL PLANT COMMUNITIES

Section 3.2 of the contract requires a concise description of the vegetation expected to occur by percent composition of dominant plant species. In order to comply with this request, a list of the potential plant species and their relative percent composition was developed for each SRS.

The lists were developed by first determining the number of range sites composing each SRS and the relative percentage of the SRS that each range site composed. Then, by utilizing a weighted average based upon the relative percent each range site composed of each SRS, and the description of the potential natural plant communities for each range site as established by the Soil Conservation Service, a list of the potential dominant plant species and their relative percent composition was developed for each

SRS.

It should be noted that these lists are reflective of the potential of the SRSs. In many instances, this potential will not be attained within fifty or even one hundred years, but may require several hundred years to be reached.

\* A list was not developed for the Riparian SRS; as there is too much variability found within the different plant communities forming the Riparian SRS. The Riparian areas throughout the District have in many cases, distinctly different vegetative potentials which cannot be combined into one list which adequately describes the potential plant community for the Riparian SRS. A separate list would have to be developed for each different riparian area within the District. This would be extremely time consuming and would require much more field analysis and data collection.



APPENDIX A

RANGE SITE PERCENTAGE COMPOSITION OF  
STANDARD HABITAT SITES  
AS DERIVED  
FROM RANGE SITE TRANSECTS ANALYZED





## APPENDIX A

Larrea tridentata Rolling Upland

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-10-NTx	Gravelly	42.9%	9
42-12-NTx	Sandy	13.7%	3
42-35-NTx	Gravelly Loam	8.6%	2
42-14-NTx	Loamy	7.7%	2
42-24-NTx	Gravelly Sand	6.9%	1
42-15-NTx	Shallow Sandy	6.9%	1
42-37-N	Malpais	4.9%	1
42-27-NTx	Igneous Hills and Mountains	3.8%	1

SHS - Larrea tridentata Breaks

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-24-NTx	Gravelly Sand	42.7%	9
42-10-NTx	Gravelly	34.7%	7
42-27-NTx	Igneous Hills and Mountains	9.3%	2
42-11-NTx	Deep Sand	5.3%	1
42-12-NTx	Sandy	4.0%	1

SHS - Larrea tridentata Hill

Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-27-NTx	Igneous Hills and Mountains	45.0%	9
42-21-NTx	Limestone Hills	35.0%	7
42-37-N	Malpais	10.0%	2
42-10-NTx	Gravelly	10.0%	2

SHS - Mixed Shrub Rolling Upland

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-35-NTx	Gravelly Loam	22.0%	6
42-16-NTx	Draw Range Site	12.0%	3
42-27-NTx	Igneous Hills and Mountains	12.0%	3
42-10-NTx	Gravelly	14.0%	3
42-12-NTx	Sandy	14.0%	3
42-11-NTx	Deep Sand	6.0%	1
42-21-NTx	Limestone Hills	6.0%	1

SHS - Mixed Shrub Hill

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-21-NTx	Limestone Hills	44.0%	10
42-27-NTx	Igneous Hills and Mountains	28.0%	7
42-103-N	Hills Range Site	12.0%	3

# APPENDIX A

## TABLE 1 - Limestone Hills

Range Size No.	Range Size	2 Comp. of Size	No. of Limestone Hills
45-10-WT	Gravelly	45.42	1
45-10-WT	Sandy	45.72	1
45-10-WT	Gravelly Sand	45.82	1
45-10-WT	Sandy	45.92	1
45-10-WT	Gravelly Sand	46.02	1
45-10-WT	Gravelly Sand	46.12	1
45-10-WT	Sandy	46.22	1
45-10-WT	Gravelly	46.32	1

## TABLE 2 - Limestone Hills

Range Size No.	Range Size	2 Comp. of Size	No. of Limestone Hills
45-10-WT	Gravelly Sand	45.72	1
45-10-WT	Gravelly	45.82	1
45-10-WT	Limestone Hills and Mountains	45.92	1
45-10-WT	Gravelly Sand	46.02	1
45-10-WT	Sandy	46.12	1

## TABLE 3 - Limestone Hills

Range Size No.	Range Size	2 Comp. of Size	No. of Limestone Hills
45-10-WT	Limestone Hills and Mountains	45.92	1
45-10-WT	Limestone Hills	46.02	1
45-10-WT	Sandy	46.12	1
45-10-WT	Gravelly	46.22	1

## TABLE 4 - Mixed Gravel Hills

Range Size No.	Range Size	2 Comp. of Size	No. of Limestone Hills
45-10-WT	Gravelly Sand	45.72	1
45-10-WT	Gravelly Sand	45.82	1
45-10-WT	Limestone Hills and Mountains	45.92	1
45-10-WT	Gravelly	46.02	1
45-10-WT	Sandy	46.12	1
45-10-WT	Gravelly Sand	46.22	1
45-10-WT	Limestone Hills	46.32	1

## TABLE 5 - Mixed Gravel Hills

Range Size No.	Range Size	2 Comp. of Size	No. of Limestone Hills
45-10-WT	Limestone Hills	45.92	1
45-10-WT	Limestone Hills and Mountains	46.02	1
45-10-WT	Gravelly Sand	46.12	1



SHS - Mixed Shrub Mountains

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-27-NTx	Igneous Hills and Mountains	56.1%	12
42-21-NTx	Limestone Hills	29.3%	6
42-24-NTx	Gravelly Sand	4.9%	1
42-35-NTx	Gravelly Loam	4.9%	1

SHS - Half Shrub Rolling Upland

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-12-NTx	Sandy	39.5%	10
42-25-NTx	Shallow Sandy	17.8%	4
42-35-NTx	Gravelly Loam	7.2%	2
42-37-N	Malpais	5.9%	1
42-10-NTx	Gravelly	5.9%	1
42-18-NTx	Bottomlands	5.0%	1
42-14-NTx	Loamy	3.9%	1

SHS - Grass Rolling Upland

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-14-NTx	Loamy	17.1%	4
42-27-NTx	Igneous Hills and Mountains	11.0%	3
42-12-NTx	Sandy	9.8%	3
42-35-NTx	Gravelly Loam	8.5%	2
42-15-NTx	Shallow Sandy	6.1%	2
42-23-NTx	Clayey	4.9%	1
42-18-NTx	Bottomlands	3.7%	1
42-16-NTx	Draw Range Site	3.7%	1
D36-102-N	Gravelly Range Site	3.7%	1
D36-104-N	Loamy	3.7%	1
D36-108-N	Basalt Hills	3.7%	1

SHS - Grass Hills

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
D36-108-N	Basalt Hills	34.8%	7
42-27-NTx	Igneous Hills and Mountains	30.4%	6
42-21-NTx	Limestone Hills	13.0%	3
D36-103-N	Hills Range Site	13.0%	3
42-37-N	Malpais	8.7%	1

SHS - Grass Mountains

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-27-NTx	Igneous Hills and Mountains	64.3%	13
D36-105-N	Breaks Range Site	14.3%	3
42-35-NTx	Gravelly Loam	14.3%	3
D36-103-N	Hills Range Site	7.1%	1

200 - Mixed Group Mountains

Range Site No.	Range Site	% Comp. of 200	No. Tennessee Analyzed
42-21-WTX	Igneous Hills and Mountains	56.12	12
42-21-WTX	Limestone Hills	19.32	6
42-21-WTX	Gravelly Sand	4.92	1
42-21-WTX	Gravelly Loam	6.92	1

200 - East North Rolling Upland

Range Site No.	Range Site	% Comp. of 200	No. Tennessee Analyzed
42-11-WTX	Sandy	39.32	10
42-11-WTX	Shallow Sandy	17.82	4
42-11-WTX	Gravelly Loam	7.12	2
42-11-W	Malpais	2.92	1
42-11-WTX	Gravelly	2.92	1
42-11-WTX	Bottomlands	2.02	1
42-11-WTX	Loamy	2.92	1

200 - Grass Rolling Upland

Range Site No.	Range Site	% Comp. of 200	No. Tennessee Analyzed
42-14-WTX	Loamy	17.12	4
42-14-WTX	Igneous Hills and Mountains	11.02	2
42-14-WTX	Sandy	9.82	2
42-14-WTX	Gravelly Loam	8.32	2
42-14-WTX	Shallow Sandy	8.12	2
42-14-WTX	Clayey	4.92	1
42-14-WTX	Bottomlands	2.72	1
42-14-WTX	Grass Range Site	2.72	1
42-14-W	Gravelly Range Site	2.72	1
42-14-W	Loamy	2.72	1
42-14-W	Basalt Hills	2.72	1

200 - Grass Hills

Range Site No.	Range Site	% Comp. of 200	No. Tennessee Analyzed
42-10-W	Basalt Hills	24.82	7
42-10-WTX	Igneous Hills and Mountains	20.42	6
42-10-WTX	Limestone Hills	12.02	2
42-10-W	Hills Range Site	12.02	2
42-10-W	Malpais	6.72	1

200 - Grass Mountains

Range Site No.	Range Site	% Comp. of 200	No. Tennessee Analyzed
42-17-WTX	Igneous Hills and Mountains	64.32	12
42-17-W	Grass Range Site	14.32	2
42-17-WTX	Gravelly Loam	14.32	2
42-17-W	Hills Range Site	7.12	2



SHS - Grass Flat

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-16-NTx	Draw Range Site	36.0%	7
42-18-NTx	Bottomlands	18.0%	4
42-14-NTx	Loamy	15.0%	3
42-23-NTx	Clayey	13.0%	3
42-12-NTx	Sandy	7.0%	1
42-15-NTx	Shallow Sandy	5.0%	1

SHS - Malpais

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-37-N	Malpais	100.0%	6

SHS - Prosopis juliflora Rolling Upland

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-12-NTx	Sandy	42.1%	10
42-15-NTx	Shallow Sandy	15.0%	3
42-18-NTx	Bottomlands	14.0%	3
42-16-NTx	Draw Range Site	7.5%	2
42-14-NTx	Loamy	5.6%	1
42-35-NTx	Gravelly Loam	5.6%	1

SHS - Prosopis juliflora Dunes

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-12-NTx	Sandy	70.1%	15
42-11-NTx	Deep Sand	13.2%	3
42-15-NTx	Shallow Sandy	12.0%	2

SHS - Pinyon-Juniper

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
D36-103-N	Hills Range Site	54.5%	11
42-10-NTx	Gravelly	13.6%	3
42-35-NTx	Gravelly Loam	13.6%	3
42-21-NTx	Limestone Hills	9.1%	2
D36-108-N	Basalt Hills	9.1%	2

SHS - Pseudoriparian

Range Site No.	Range Site	% Comp. of SHS	No. Transects Analyzed
42-24-NTx	Gravelly Sand	40.0%	8
42-16-NTx	Draw Range Site	30.0%	6
42-18-NTx	Bottomlands	15.0%	3
42-12-NTx	Gravelly	10.0%	2
42-15-NTx	Sandy	5.0%	1

ENE - Green Tint

Range Size No.	Range Size	% Comp. of ENE	No. Transverse Analyzed
42-12-WT	Shallow Sandy	2.02	1
42-12-WT	Sandy	7.02	1
42-12-WT	Clayey	13.02	3
42-12-WT	Clayey	13.02	3
42-12-WT	Loamy	13.02	3
42-12-WT	Bottomlands	18.02	4
42-12-WT	Draw Range Size	36.02	7

ENE - Yellow

Range Size No.	Range Size	% Comp. of ENE	No. Transverse Analyzed
42-12-W	Medium	100.02	6

ENE - Transverse Interiors Within Range

Range Size No.	Range Size	% Comp. of ENE	No. Transverse Analyzed
42-12-WT	Gravelly Loam	3.62	1
42-12-WT	Loamy	5.62	1
42-12-WT	Draw Range Size	7.32	1
42-12-WT	Bottomlands	14.02	3
42-12-WT	Shallow Sandy	15.02	3
42-12-WT	Sandy	42.12	10

Transverse Interiors Range

Range Size No.	Range Size	% Comp. of ENE	No. Transverse Analyzed
42-12-WT	Shallow Sandy	12.02	3
42-12-WT	Deep Sand	13.32	3
42-12-WT	Sandy	70.12	12

ENE - Brown-Black

Range Size No.	Range Size	% Comp. of ENE	No. Transverse Analyzed
42-12-W	Gravelly Hills	8.12	1
42-12-WT	Limestone Hills	9.12	1
42-12-WT	Gravelly Loam	13.62	3
42-12-WT	Gravelly	13.62	3
42-12-WT	Hills Range Size	24.32	11

ENE - Reddish-brown

Range Size No.	Range Size	% Comp. of ENE	No. Transverse Analyzed
42-12-WT	Sandy	2.02	1
42-12-WT	Gravelly	10.02	1
42-12-WT	Bottomlands	15.02	3
42-12-WT	Draw Range Size	30.02	6
42-12-WT	Gravelly Sand	40.02	8



PLANT SPECIES INVENTORY LISTS FOR STANDARD HABITAT TYPES FOUND  
IN THE BUREAU OF LAND MANAGEMENT, LAS CRUCES DISTRICT







PLANT SPECIES INVENTORY LISTS FOR STANDARD HABITAT SITES FOUND  
IN THE BUREAU OF LAND MANAGEMENT, LAS CRUCES DISTRICT



SPECIES INVENTORY LIST FOR THE LARREA TRIDENTATA ROLLING UPLAND STANDARD HABITAT SITE

GRASSES

Erioneuron pulchellum  
Scleropogon brevifolius  
Hilaria mutica  
Muhlenbergia porteri  
Bouteloua eriopoda  
Bouteloua curtipendula

SHRUBS AND TREES

Larrea divaricata  
Gutierrezia sarothrae  
Flourensia cernua  
Prosopis glandulosa  
Parthenium incanum  
Rhus microphylla  
Nolina microphylla  
Dyssodia acerosa

FORBS

Perezia nana  
Sphaeralcea spp.  
Cassia bauhinioides  
Allionia incarnata  
Petunia parviflora  
Euphorbia alta  
Bahia absinthifolia  
Solanum elaeagnifolium  
Salsola kali

\* The above listed species compose approximately 93.9% of the plant species composition found within the Larrea tridentata Rolling Upland Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

GRASSES	SHRUBS AND TREES	FORNS
Eriogonum pulchellum	Larrea divaricata	Petalis nama
Polypogon monspeliensis	Gutierrezia sarothrae	Sphaeralcea spp.
Hilaria mutica	Prosopis juliflora	Cassia paspalifolia
Muhlenbergia porteri	Prosopis glandulosa	Alliaria incana
Conoclinium artemisiifolium	Parthenocissus vitacea	Pectis pectis
Conoclinium artemisiifolium	Rhus microphylla	Euphorbia alba
	Holcus microphyllus	Bahia abutilifolia
	Dioscorea nutans	Solanum elaeagnifolium
		Salsola kali

\* The above listed species comprises approximately 95% of the plant species composition found within the Larrea tridentata Rolling Upland Stanford Habitat Site. Species are listed in order of dominance, as was determined from S.M. 1978 range transect data.



SPECIES INVENTORY LIST FOR THE LARREA TRIDENTATA BREAKS STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Erioneuron pulchellum	Larrea divaricata	Euphorbia spp.
Bouteloua eriopoda	Prosopis glandulosa	Bahia absinthifolia
Bothriochloa barbinoides	Acacia constricta	Allionia incarnata
Hilaria mutica	Parthenium incanum	Cassia bauhinoides
Muhlenbergia porteri	Gutierrezia sarothrae	Lesquerella fendleri
Tridens muticus	Menodora scabra	Sphaeralcea spp.
Bouteloua curtipendula	Flourensia cernua	Petunia parvifolia
Sporobolus flexuosus	Coldenia canescens	Talinum angustissimum
Sporobolus cryptandrus	Yucca elata	Solanum elaeagnifolium
	Rhus microphylla	
	Dyssodia acerosa	
	Ephedera trifurca	

\* The above listed species compose approximately 92.4% of the plant species composition found within the Larrea tridentata Breaks Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE LARREA TRIDENTATA BRUSH STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
<i>Eriogonum pulchellum</i>	<i>Larrea divaricata</i>	<i>Euphorbia</i> spp.
<i>Gouania erigoda</i>	<i>Prosopis glandulosa</i>	<i>Bahia hirsutifolia</i>
<i>Baccharis berlandieri</i>	<i>Acacia constricta</i>	<i>Allouia lucida</i>
<i>Wilfaya erica</i>	<i>Parthenium lachnan</i>	<i>Cassia benthicola</i>
<i>Heliotropium porteri</i>	<i>Gutierrezia sarothrae</i>	<i>Lesquerella fendleri</i>
<i>Tribulus terrestris</i>	<i>Menodora scabra</i>	<i>Sphaeralcea</i> spp.
<i>Boerhaavia nudicaulis</i>	<i>Alouatta carolinensis</i>	<i>Petrorhiza pumila</i>
<i>Sporobolus elaeagnus</i>	<i>Colymbia canescens</i>	<i>Taraxacum officinale</i>
<i>Sporobolus vaginatus</i>	<i>Yucca elata</i>	<i>Solanum elaeagnifolium</i>
	<i>Rhus microphylla</i>	
	<i>Yucca elata</i>	
	<i>Ephedra viridis</i>	

\* The above listed species compose approximately 95.4% of the plant species composition found within the Larrea tridentata Brush Standard Habitat Site. Species are listed in order of dominance, as was determined from N.M. 1978 range census data.



SPECIES INVENTORY LIST FOR THE LARREA TRIDENTATA HILL STANDARD HABITAT SITE

GRASSES

Bouteloua eriopoda  
 Erioneuron pulchellum  
 Hilaria mutica  
 Muhlenbergia porteri  
 Aristida spp.  
 Enneapogon desvauxii  
 Tridens muticus  
 Lycurus phleoides  
 Sporobolus cryptandrus  
 Scleropogon brevifolius

SHRUBS AND TREES

Larrea divaricata  
 Parthenium incanum  
 Gutierrezia sarothrae  
 Flourensia cernua  
 Aloysia Wrightii  
 Acacia constricta  
 Rhus microphylla  
 Dalea formosa  
 Zinnia pumila  
 Menodora scabra  
 Fouquieria splendens  
 Nolina microcarpa  
 Atriplex canescens  
 Koeberlinia spinosa  
 Coldenia canescens

FORBS

Allionia incarnata  
 Euphorbia spp.  
 Eriogonum spp.  
 Bahia absinthifolia  
 Perezia nana  
 Melampodium leucanthum  
 Lesquerella fendleri  
 Cassia bahinioides  
 Chenopodium album  
 Sphaeralcea spp.  
 Tidestromia spp.  
 Amaranthus spp.

\* The above listed species compose approximately 93.7% of the plant species composition found within the Larrea tridentata Hill Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE LARRYA TRIDENTATA HILL STANDARD HABITAT SITE

PLANTS	SHRUBS AND TREES	GRASSES
<i>Albizia leucacantha</i> <i>Euphorbia</i> spp. <i>Eriogonum</i> spp. <i>Gilia</i> <i>spaldingii</i> <i>Patula</i> <i>hans</i> <i>Helianthus</i> <i>lanceolatus</i> <i>Lespedeza</i> <i>hirsuta</i> <i>Cassia</i> <i>pauciflora</i> <i>Chamaecrista</i> <i>albiflora</i> <i>Sphaeralcea</i> spp. <i>Tidestromia</i> spp. <i>Lespedeza</i> spp.	<i>Larrea divaricata</i> <i>Prosopis juliflora</i> <i>Gutierrezia sarothrae</i> <i>Flourensia cernua</i> <i>Alouatta</i> <i>Wrightii</i> <i>Acacia constricta</i> <i>Rhus microphylla</i> <i>Palis</i> <i>torresii</i> <i>Yucca</i> <i>humilis</i> <i>Neoholcuspis</i> <i>Tropaeolum</i> <i>spaldingii</i> <i>Holcus microcarpa</i> <i>Artibeus</i> <i>canescens</i> <i>Peromyscus</i> <i>leucopus</i> <i>Colletes</i> <i>canescens</i>	<i>Bouteloua eriopoda</i> <i>Eriogonum juliflora</i> <i>Hilaria</i> <i>mutica</i> <i>Neuhoffia</i> <i>porteri</i> <i>Arctostaphylos</i> spp. <i>Emmenanthe</i> <i>hirsuta</i> <i>Trifolium</i> <i>montanum</i> <i>Lycium</i> <i>philadelphicum</i> <i>Spotanulus</i> <i>corymbosus</i> <i>Helianthus</i> <i>spaldingii</i>

\* The above listed species compose approximately 95.7% of the plant species composition found within the Larrya Tridentata Hill Standard Habitat Site. Species are listed in order of dominance, as was determined from NRC 1978 range transect data.



SPECIES INVENTORY LIST FOR THE MIXED SHRUB ROLLING UPLAND STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Hilaria mutica	Gutierrezia sarothrae	Aster spp.
Bouteloua eriopoda	Prosopis glandulosa	Perezia nana
Erioneuron pulchellum	Larrea divaricata	Bahia absinthifolia
Bouteloua hirsuta	Flourensia cernua	Sphaeralcea spp.
Scleropogon brevifolius	Parthenium incanum	Allionia incarnata
Bouteloua gracilis	Mimosa biuncifera	Cassia bauhinioides
Bouteloua curtipendula	Opuntia Engelmannii	Baileya multiradiata
Bothriochloa saccharoides	Rhus microphylla	Lesquerella fendleri
Sporobolus flexuosus	Ericameria laricifolia	Euphorbia albomarginata
Muhlenbergia porteri	Eriogonum Wrightii	
Aristida spp.	Dalea formosa	
Aristida longiseta	Acacia constricta	
	Krameria parvifolia	
	Aloysia Wrightii	
	Ephedra trifurca	
	Yucca elata	
	Fallugia paradoxa	
	Nolina microcarpa	
	Dasyllirion Wheeleri	

\* The above listed species compose approximately 93.6% of the plant species composition found within the Mixed Shrub Rolling Upland Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.





SPECIES INVENTORY LIST FOR THE MIXED SHRUB HILL STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Bouteloua eriopoda	Gutierrezia sarothrae	Sphaeralcea spp.
Erioneuron pulchellum	Parthenium incanum	Euphorbia spp.
Bouteloua gracilis	Larrea divaricata	Allionia incarnata
Muhlenbergia montana	Flourensia cernua	Melampodium leucanthum
Bouteloua curtipendula	Dalea formosa	Dalea Jamesii
Hilaria Mutica	Acacia constricta	Allium spp.
Muhlenbergia spp.	Juniperus monosperma	
Aristida spp.	Cercocarpus montanus	
Tridens muticus	Menodora scabra	
Muhlenbergia porteri	Rhus microphylla	
Enneapogon desvauxii	Prosopis glandulosa	
Lycurus phleoides	Fouquieria splendens	
Sporobolus flexuosus	Viguiera stenoloba	
	Opuntia Engelmannii	
	Dyssodia acerosa	
	Nolina microcarpa	
	Rhus aromatica	
	Aloysia Wrightii	
	Yucca baccata	
	Eriogonum Wrightii	
	Koeberlinia spinosa	
	Fallugia paradoxa	
	Dasyilirion Wheeleri	
	Eurotia lanata	

\* The above listed species compose approximately 91.5% of the plant species composition found within the Mixed Shrub Hill Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.





SPECIES INVENTORY LIST FOR THE MIXED SHRUB MOUNTAIN STANDARD HABITAT SITE

GRASSES

Bouteloua eriopoda  
 Bouteloua curtipendula  
 Erioneuron pulchellum  
 Bouteloua hirsuta  
 Bouteloua gracilis  
 Digitaria californica  
 Muhlenbergia porteri  
 Sporobolus flexuosus  
 Bothriochloa saccharoides  
 Tridens muticus  
 Muhlenbergia Emersleyi  
 Aristida spp.

SHRUBS AND TREES

Larrea divaricata  
 Parthenium incanum  
 Gutierrezia sarothrae  
 Quercus turbinella  
 Opuntia Engelmannii  
 Acacia constricta  
 Mimosa biuncifera  
 Fallugia paradoxa  
 Prosopis glandulosa  
 Aloysia Wrightii  
 Yucca baccata  
 Fouquieria splendens  
 Rhus aromatica  
 Dasylirion Wheeleri  
 Eriogonum Wrightii  
 Flourensia cernua  
 Cercocarpus montanus  
 Dalea formosa  
 Rhus microphylla  
 Menodora scabra  
 Garrya Wrightii  
 Quercus grisea  
 Baccharis spp.

FORBS

Sphaeralcea spp.  
 Allionia incarnata  
 Croton pottsii  
 Euphorbia spp.  
 Dyssodia pasposa  
 Cevallia sinuata  
 Commelina erecta  
 Grindelia squarrosa  
 Polygala spp.  
 Bahia absinthifolia

\* The above listed species compose approximately 92.7% of the plant species composition found within the Mixed Shrub Mountain Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE MIXED SHRUB MOUNTAIN STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	TREES
<i>Hordeum strictum</i>	<i>Larix divaricata</i>	<i>Sparganium angustifolium</i>
<i>Hordeum strictum</i>	<i>Parthenium incanum</i>	<i>Alisma incanum</i>
<i>Eriogonum fasciculatum</i>	<i>Gutierrezia serotoma</i>	<i>Croton fasciatus</i>
<i>Hordeum strictum</i>	<i>Quercus emoryi</i>	<i>Euphorbia</i> spp.
<i>Hordeum strictum</i>	<i>Quercus engelmannii</i>	<i>Gynandropsis gynandra</i>
<i>Hordeum strictum</i>	<i>Acacia constricta</i>	<i>Ceanothus americanus</i>
<i>Hordeum strictum</i>	<i>Rhus glabra</i>	<i>Commersonia bartramia</i>
<i>Hordeum strictum</i>	<i>Salix pyramidalis</i>	<i>Grindelia squarrosa</i>
<i>Hordeum strictum</i>	<i>Fraxinus viridis</i>	<i>Polypodium</i> spp.
<i>Hordeum strictum</i>	<i>Alopecurus pratensis</i>	<i>Rhynchospora alba</i>
<i>Hordeum strictum</i>	<i>Taraxacum officinale</i>	
<i>Hordeum strictum</i>	<i>Thalictrum flavum</i>	
<i>Hordeum strictum</i>	<i>Erigeron philadelphicus</i>	
<i>Hordeum strictum</i>	<i>Eriogonum fasciculatum</i>	
<i>Hordeum strictum</i>	<i>Flourensia cernua</i>	
<i>Hordeum strictum</i>	<i>Cercocarpus montana</i>	
<i>Hordeum strictum</i>	<i>Salix lasiolepis</i>	
<i>Hordeum strictum</i>	<i>Rhus microphylla</i>	
<i>Hordeum strictum</i>	<i>Manisotoma acuta</i>	
<i>Hordeum strictum</i>	<i>Carya wrightii</i>	
<i>Hordeum strictum</i>	<i>Quercus grisea</i>	
<i>Hordeum strictum</i>	<i>Asclepias tuberosa</i>	

\* The above listed species compose approximately 95.7% of the plant species composition found within the Mixed Shrub Mountain Standard Habitat Site. Species are listed in order of dominance, as was determined from NRI, 1998 range transect data.



SPECIES INVENTORY LIST FOR THE HALF SHRUB ROLLING UPLAND STANDARD HABITAT SITE

GRASSES

Erioneuron pulchellum  
 Bouteloua eriopoda  
 Hilaria mutica  
 Muhlenbergia porteri  
 Sporobolus cryptandrus  
 Sporobolus flexuosus  
 Bothriochloa barbinoides  
 Bouteloua aristidoides  
 Aristida adscensionis  
 Bouteloua barbata

SHRUBS AND TREES

Gutierrezia sarothrae  
 Prosopis glandulosa  
 Ephedra trifurca  
 Yucca elata  
 Artemisia filifolia  
 Flourensia cernua  
 Ziziphus obtusifolia  
 Acacia constricta  
 Larrea divaricata  
 Rhus microphylla  
 Fallugia paradoxa

FORBS

Croton pottsii  
 Sphaeralcea spp.  
 Euphorbia spp.  
 Bahia absinthifolia  
 Linum spp.  
 Salsola kali  
 Tidestromia lanuginosa  
 Petunia parviflora  
 Amaranthus spp.

\* The above listed species compose approximately 94% of the plant species composition found within the Half Shrub Rolling Upland Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE HALF SHEEP ROLLING UPLAND STANDARD HABITAT SITE

PLANTS	SPERMATOPHYTES AND GYMNOSPERMATOPHYTES	FERNS
<i>Ericaceae</i> <i>puberulum</i>	<i>Callitriche latifolia</i>	<i>Cypripedium</i> <i>puberulum</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Prunella glandulosa</i>	<i>Sphagnum</i> <i>app.</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Sphagnum</i> <i>virginicum</i>	<i>Euphorbia</i> <i>app.</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Yucca</i> <i>elata</i>	<i>Hamamelis</i> <i>virginica</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Artemisia</i> <i>filifolia</i>	<i>Linum</i> <i>app.</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Thalictrum</i> <i>virginicum</i>	<i>Salix</i> <i>caprea</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Liatris</i> <i>obovata</i>	<i>Thalictrum</i> <i>virginicum</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Asclepias</i> <i>curtissii</i>	<i>Potamogeton</i> <i>perfoliatus</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Lactuca</i> <i>diversa</i>	<i>Amorpha</i> <i>canescens</i>
<i>Hamamelis</i> <i>virginica</i>	<i>Rhus</i> <i>microphylla</i>	
<i>Hamamelis</i> <i>virginica</i>	<i>Fragaria</i> <i>virginiana</i>	

\* The above listed species represent approximately 85% of the plant species composition found within the Half Sheep Rolling Upland Standard Habitat Site. Species are listed in order of dominance, as was determined from B.M. 1978 cover census data.



SPECIES INVENTORY LIST FOR THE GRASS ROLLING UPLAND STANDARD HABITAT SITE

GRASSES

Hilaria mutica  
 Bouteloua eriopoda  
 Erioneuron pulchellum  
 Scleropogon brevifolius  
 Bouteloua gracilis  
 Bouteloua curtipendula  
 Muhlenbergia arenicola  
 Sporobolus airoides  
 Sitanion hystrix  
 Bouteloua hirsuta  
 Aristida spp.  
 Panicum obtusum  
 Muhlenbergia porteri  
 Sporobolus flexuosus  
 Bouteloua barbata

SHRUBS AND TREES

Larrea divaricata  
 Gutierrezia sarothrae  
 Rhus microphylla  
 Parthenium incanum  
 Prosopis glandulosa  
 Ephedra trifurca  
 Yucca elata  
 Dalea formosa  
 Lycium pallidum

FORBS

Croton pottsii  
 Sphaeralcea spp.  
 Euphorbia spp.  
 Solanum elaeagnifolium  
 Allionia incarnata  
 Machaeranthera spp.  
 Hoffmanseggia glauca  
 Lepidium montanum  
 Tidestromia lanuginosa  
 Bahia absinthifolia

\* The above listed species compose approximately 96.6% of the plant species composition found within the Grass Rolling Upland Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

# SPECIES INVENTORY LIST FOR THE GRASS BOLLING PLANT STANDARD HABITAT SITE

CLASS	GENUS AND SPECIES	FORM
1	<i>Alnus incana</i>	Tree
2	<i>Salix alba</i>	Shrub
3	<i>Salix caprea</i>	Shrub
4	<i>Salix elaeagnifolia</i>	Shrub
5	<i>Salix incana</i>	Shrub
6	<i>Salix repens</i>	Shrub
7	<i>Salix viminalis</i>	Shrub
8	<i>Salix viminalis</i>	Shrub
9	<i>Salix viminalis</i>	Shrub
10	<i>Salix viminalis</i>	Shrub
11	<i>Salix viminalis</i>	Shrub
12	<i>Salix viminalis</i>	Shrub
13	<i>Salix viminalis</i>	Shrub
14	<i>Salix viminalis</i>	Shrub
15	<i>Salix viminalis</i>	Shrub
16	<i>Salix viminalis</i>	Shrub
17	<i>Salix viminalis</i>	Shrub
18	<i>Salix viminalis</i>	Shrub
19	<i>Salix viminalis</i>	Shrub
20	<i>Salix viminalis</i>	Shrub
21	<i>Salix viminalis</i>	Shrub
22	<i>Salix viminalis</i>	Shrub
23	<i>Salix viminalis</i>	Shrub
24	<i>Salix viminalis</i>	Shrub
25	<i>Salix viminalis</i>	Shrub
26	<i>Salix viminalis</i>	Shrub
27	<i>Salix viminalis</i>	Shrub
28	<i>Salix viminalis</i>	Shrub
29	<i>Salix viminalis</i>	Shrub
30	<i>Salix viminalis</i>	Shrub
31	<i>Salix viminalis</i>	Shrub
32	<i>Salix viminalis</i>	Shrub
33	<i>Salix viminalis</i>	Shrub
34	<i>Salix viminalis</i>	Shrub
35	<i>Salix viminalis</i>	Shrub
36	<i>Salix viminalis</i>	Shrub
37	<i>Salix viminalis</i>	Shrub
38	<i>Salix viminalis</i>	Shrub
39	<i>Salix viminalis</i>	Shrub
40	<i>Salix viminalis</i>	Shrub
41	<i>Salix viminalis</i>	Shrub
42	<i>Salix viminalis</i>	Shrub
43	<i>Salix viminalis</i>	Shrub
44	<i>Salix viminalis</i>	Shrub
45	<i>Salix viminalis</i>	Shrub
46	<i>Salix viminalis</i>	Shrub
47	<i>Salix viminalis</i>	Shrub
48	<i>Salix viminalis</i>	Shrub
49	<i>Salix viminalis</i>	Shrub
50	<i>Salix viminalis</i>	Shrub
51	<i>Salix viminalis</i>	Shrub
52	<i>Salix viminalis</i>	Shrub
53	<i>Salix viminalis</i>	Shrub
54	<i>Salix viminalis</i>	Shrub
55	<i>Salix viminalis</i>	Shrub
56	<i>Salix viminalis</i>	Shrub
57	<i>Salix viminalis</i>	Shrub
58	<i>Salix viminalis</i>	Shrub
59	<i>Salix viminalis</i>	Shrub
60	<i>Salix viminalis</i>	Shrub
61	<i>Salix viminalis</i>	Shrub
62	<i>Salix viminalis</i>	Shrub
63	<i>Salix viminalis</i>	Shrub
64	<i>Salix viminalis</i>	Shrub
65	<i>Salix viminalis</i>	Shrub
66	<i>Salix viminalis</i>	Shrub
67	<i>Salix viminalis</i>	Shrub
68	<i>Salix viminalis</i>	Shrub
69	<i>Salix viminalis</i>	Shrub
70	<i>Salix viminalis</i>	Shrub
71	<i>Salix viminalis</i>	Shrub
72	<i>Salix viminalis</i>	Shrub
73	<i>Salix viminalis</i>	Shrub
74	<i>Salix viminalis</i>	Shrub
75	<i>Salix viminalis</i>	Shrub
76	<i>Salix viminalis</i>	Shrub
77	<i>Salix viminalis</i>	Shrub
78	<i>Salix viminalis</i>	Shrub
79	<i>Salix viminalis</i>	Shrub
80	<i>Salix viminalis</i>	Shrub
81	<i>Salix viminalis</i>	Shrub
82	<i>Salix viminalis</i>	Shrub
83	<i>Salix viminalis</i>	Shrub
84	<i>Salix viminalis</i>	Shrub
85	<i>Salix viminalis</i>	Shrub
86	<i>Salix viminalis</i>	Shrub
87	<i>Salix viminalis</i>	Shrub
88	<i>Salix viminalis</i>	Shrub
89	<i>Salix viminalis</i>	Shrub
90	<i>Salix viminalis</i>	Shrub
91	<i>Salix viminalis</i>	Shrub
92	<i>Salix viminalis</i>	Shrub
93	<i>Salix viminalis</i>	Shrub
94	<i>Salix viminalis</i>	Shrub
95	<i>Salix viminalis</i>	Shrub
96	<i>Salix viminalis</i>	Shrub
97	<i>Salix viminalis</i>	Shrub
98	<i>Salix viminalis</i>	Shrub
99	<i>Salix viminalis</i>	Shrub
100	<i>Salix viminalis</i>	Shrub

The above listed species represent approximately 95.5% of the plant species composition found within the Grass Bolling Plant Standard Habitat Site. Species are listed in order of dominance, as was determined from 50m x 10m transect data.



SPECIES INVENTORY LIST FOR THE GRASS HILL STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Bouteloua eriopoda	Gutierrezia sarothrae	Sphaeralcea spp.
Bouteloua curtipendula	Parthenium incanum	Croton pottsii
Hilaria mutica	Dalea formosa	Chenopodium album
Bouteloua hirsuta	Quercus spp.	Tragia spp.
Bouteloua gracilis	Aloysia Wrightii	Melampodium leucanthum
Aristida spp.	Dasyllirion Wheeleri	Bahia absinthifolia
Lycurus phleoides	Larrea divaricata	Salsola kali
Muhlenbergia montana	Nolina microcarpa	Lesquerella fendleri
Erioneuron pulchellum	Cercocarpus montanus	Cassia bauhinioides
Bothriochloa saccharoides	Juniperus monosperma	
Tridens muticus	Prosopis glandulosa	
Sporobolus contractus	Calliandra eriophylla	
Eragrostis spp.	Viguiera longifolia	
Setaria macrostachya	Artemisia ludoviciana	
Sporobolus cryptandrus		
Stipa comata		
Enneapogon desvauxii		

\* The above listed species compose approximately 92.5% of the plant species composition found within the Grass Hill Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.





# SPECIES INVENTORY LIST FOR THE GRASS MOUNTAIN STANDARD HABITAT SITE

## GRASSES

Bouteloua eriopoda  
 Hilaria mutica  
 Bouteloua curtipendula  
 Bouteloua gracilis  
 Aristida spp.  
 Muhlenbergia torreyi  
 Bouteloua hirsuta  
 Erioneuron pulchellum  
 Muhlenbergia porteri  
 Setaria macrostachya  
 Lycurus phleoides  
 Leptochloa dubia  
 Panicum obtusum  
 Bothriochloa saccharoides  
 Sporobolus cryptandrus  
 Digitaria californica  
 Enneapogon desvauxii

## SHRUBS AND TREES

Parthenium incanum  
 Gutierrezia sarothrae  
 Prosopis glandulosa  
 Larrea divaricata  
 Artemisia ludoviciana  
 Aloysia Wrightii  
 Juniperus monosperma  
 Fallugia paradoxa  
 Flourensia cernua  
 Atriplex canescens  
 Cercocarpus montanus  
 Viguiera stenoloba  
 Yucca baccata  
 Ceratoides lanata  
 Mimosa biuncifera  
 Ephedra trifurca  
 Fouquieria splendens  
 Lycium pallidum  
 Acacia constricta  
 Dasylirion Wheeleri

## FORBS

Hoffmanseggia Jamesii  
 Sphaeralcea spp.  
 Astragalus spp.  
 Solanum elaeagnifolium  
 Bahia absinthifolia  
 Machaeranthera tephrones  
 Croton pottsii  
 Euphorbia spp.  
 Perezia nana  
 Hoffmanseggia glauca  
 Amaranthus spp.  
 Tribulus terrestris

\* The above listed species compose approximately 95.1% of the plant species composition found within the Grass Mountain Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.





SPECIES INVENTORY LIST FOR THE GRASS FLAT STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Hilaria mutica	Gutierrezia sarothrae	Euphorbia spp.
Scleropogon brevifolius	Prosopis glandulosa	Solanum elaeagnifolium
Panicum obtusum	Viguiera stenoloba	Hoffmanseggia glauca
Bouteloua gracilis	Larrea divaricata	Sphaeralcea spp.
Eragrostis spp.	Flourensia cernua	Croton pottsii
Muhlenbergia porteri	Ephedra trifurca	Kuhnia chlorolepsis
Sporobolus airoides	Coldenia canescens	Circium spp.
Erioneruon pulchellum		Tidestroemia lanuginosa
Aristida longiseta		Amaranthus spp.
Sporobolus contractus		Perezia nana
Bouteloua eriopoda		Petunia parviflora
Muhlenbergia arenicola		
Sporobolus cryptandrus		

\* The above listed species compose approximately 94.3% of the plant species composition found within the Grass Flat Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE GRASS FLAT STANDARD HABITAT SITE

GRASS	SHRUBS AND TREES	FORBS
<i>Wilhelmia muscosa</i>	<i>Gutierrezia serotina</i>	<i>Euphorbia</i> spp.
<i>Sclerophloeus brevifolius</i>	<i>Eurotia glandulosa</i>	<i>Solanum elaeagnifolium</i>
<i>Ferula obtusa</i>	<i>Viguiera americana</i>	<i>Mollispermum glaucum</i>
<i>Suaeda frutescens</i>	<i>Larrea divaricata</i>	<i>Sphaeralcea</i> spp.
<i>Eriogonum</i> spp.	<i>Eriogonum cernuum</i>	<i>Croton porteri</i>
<i>Holboellia porteri</i>	<i>Ephedra viridis</i>	<i>Rhus chlorophylla</i>
<i>Sporobolus airoides</i>	<i>Cylindropuntia canescens</i>	<i>Cirsium</i> spp.
<i>Eriogonum umbellatum</i>		<i>Tidestromia lanuginosa</i>
<i>Artemisia tridentata</i>		<i>Amelanchier</i> spp.
<i>Sporobolus contractus</i>		<i>Petroselinum</i>
<i>Suaeda stricta</i>		<i>Pennisetum parviflorum</i>
<i>Holboellia argentea</i>		
<i>Sporobolus cryptandrus</i>		

\* The above listed species compose approximately 96.5% of the plant species composition found within the Grass Flat Standard Habitat Site. Species are listed in order of dominance, as was determined from RLM, 1978 range expansion data.



SPECIES INVENTORY LIST FOR THE MALPAIS STANDARD HABITAT SITE

GRASSES

Bouteloua eriopoda  
 Hilaria mutica  
 Scleropogon brevifolius  
 Erioneuron pulchellum  
 Muhlenbergia porteri  
 Sporobolus airoides  
 Sporobolus cryptandrus  
 Bouteloua curtipendula  
 Enneapogon desvauxii  
 Aristida adscensionis

SHRUBS AND TREES

Gutierrezia sarothrae  
 Eriogonum Wrightii  
 Larrea divaricata  
 Prosopis glandulosa  
 Ephedra trifurca  
 Atriplex canescens  
 Lycium pallidum  
 Rhus microphylla  
 Yucca elata  
 Dalea formosa  
 Zinnia grandiflora  
 Parthenium incanum

FORBS

Ammocodon chenopodioides  
 Bahia absinthifolia  
 Salsola kali  
 Chenopodium album  
 Cassia bauhinioides  
 Sphaeralcea spp.

\* The above listed species compose approximately 98% of the plant species composition found within the Malpais Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.





SPECIES INVENTORY LIST FOR THE PROSOPIS JULIFLORA ROLLING UPLAND STANDARD HABITAT  
SITE

GRASSES

Hilaria mutica  
Erioneuron pulchellum  
Sporobolus flexuosus  
Leptochloa dubia  
Muhlenbergia porteri  
Sporobolus cryptandrus  
Panicum obtusum  
Setaria macrostachya  
Bouteloua eriopoda

SHRUBS AND TREES

Prosopis glandulosa  
Gutierrezia sarothrae  
Flourensia cernua  
Larrea divaricata  
Ephedra trifurca  
Atriplex canescens  
Lycium pallidum  
Yucca elata

FORBS

Euphorbia spp.  
Portulaca spp.  
Croton pottsii  
Perezia nana  
Lesquerella fendleri

\* The above listed species compose approximately 91.9% of the plant species composition found within the Prosopis juliflora Rolling Upland Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

GRASSES	SHRUBS AND TREES	POSES
<i>Eleusine indica</i> <i>Echinochloa polystachya</i> <i>Sporobolus diander</i> <i>Lycopodium obscurum</i> <i>Andropogon squarrosus</i> <i>Ischaemum polystachya</i> <i>Setaria verticillata</i> <i>Leptochloa setacea</i>	<i>Bruguiera flabellifera</i> <i>Conocarpus erectus</i> <i>Eleusine indica</i> <i>Lycopodium obscurum</i> <i>Andropogon squarrosus</i> <i>Ischaemum polystachya</i> <i>Setaria verticillata</i> <i>Leptochloa setacea</i>	<i>Eleusine indica</i> <i>Echinochloa polystachya</i> <i>Sporobolus diander</i> <i>Lycopodium obscurum</i> <i>Andropogon squarrosus</i> <i>Ischaemum polystachya</i> <i>Setaria verticillata</i> <i>Leptochloa setacea</i>

The above listed species represent approximately 91.5% of the plant species composition found within the Tropical Jungle Research Station site. Species are listed in order of dominance, as was determined from 1978 range transect data.



SPECIES INVENTORY LIST FOR THE PROSOPIS JULIFLORA DUNES STANDARD HABITAT SITE

GRASSES

Sporobolus flexuosus  
Sporobolus cryptandrus  
Erioneuron pulchellum  
Muhlenbergia porteri  
Bouteloua eriopoda  
Sporobolus airoides

SHRUBS AND TREES

Prosopis glandulosa  
Gutierrezia sarothrae  
Larrea divaricata  
Flourensia cernua  
Atriplex canescens  
Yucca elata  
Ephedra trifurca  
Lycium pallidum  
Dalea scoparia  
Parthenium incanum

FORBS

Euphorbia spp.  
Sphaeralcea spp.  
Helianthus spp.  
Lepidium montanum  
Euphorbia albomarginata  
Talinum angustissimum

\* The above listed species compose approximately 94.8% of the plant species composition found within the Prosopis juliflora Dunes Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE PROPOSED JULIENNA DUNES STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
<i>Sporobolus flexuosus</i> <i>Sporobolus caryocarpus</i> <i>Eriosema pulchellum</i> <i>Hesperis matronalis</i> <i>Sonchus oleraceus</i> <i>Sporobolus airoides</i>	<i>Prosopis juliflora</i> <i>Opuntia stricta</i> <i>Leucaena diversifolia</i> <i>Prosopis juliflora</i> <i>Acacia saligna</i> <i>Yucca elata</i> <i>Sporobolus airoides</i> <i>Lycium pallidum</i> <i>Batis maritima</i> <i>Portulaca oleraceus</i>	<i>Euphorbia</i> spp. <i>Sporobolus</i> spp. <i>Melilotus</i> spp. <i>Lycium</i> spp. <i>Euphorbia albertensis</i> <i>Taraxacum officinale</i>

\* The above listed species compose approximately 84.8% of the plant species composition found within the Proposed Julien Dunes Standard Habitat Site. Species are listed in order of dominance, as was determined from NIM, 1978 range inventory data.



# SPECIES INVENTORY LIST FOR THE PINYON-JUNIPER STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Bouteloua gracilis	Juniperus monosperma	Allium spp.
Muhlenbergia montana	Pinus edulis	Verbesina longifolia
Bouteloua curtipendula	Cercocarpus montanus	Allium macropetalum
Muhlenbergia rigida	Gutierrezia sarathrae	Lesquerella fendleri
Bouteloua eriopoda	Yucca baccata	Aster spp.
Enneapogon desvauxii	Parthenium incanum	Eriogonum spp.
Bouteloua hirsuta	Nolina microcarpa	Sphaeralcea spp.
Eragrostis intermedia	Fallugia paradoxa	Perezia nana
Erioneuron pulchellum	Quercus turbinella	Solanum elaeagnifolium
Muhlenbergia torreyi	Viguiera longifolia	Euphorbia spp.
Muhlenbergia arenacea	Rhus aromatica	Baileya multiradiata
Stipa eminens	Dalea formosa	Talinum anguspissimum
Aristida spp.	Dyssodia acerosa	Allionia incarnata
Tridens muticus	Opuntia Engelmannii	
Aristida longiseta	Opuntia imbricata	
Stipa viridula	Lycium pallidum	
Koeleria cristata	Ericameria laricifolia	
Lycurus phleoides	Rhus microphylla	
Sporobolus flexuosus	Fouquieria splendens	
Aristida divaricata	Quercus spp.	
	Viguiera stenoloba	

\* The above listed species compose approximately 91.3% of the plant species composition found within the Pinyon-Juniper Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

CHARACTER	SHRUBS AND TREES	GRASSES
<i>Bouteloua gracilis</i>	<i>Juniperus monosperma</i>	<i>Alfalfa spp.</i>
<i>Helianthus annuus</i>	<i>Pinus edulis</i>	<i>Verbena longifolia</i>
<i>Bouteloua curtipendula</i>	<i>Gutierrezia serotena</i>	<i>Alfalfa monosperma</i>
<i>Helianthus rigidus</i>	<i>Gutierrezia serotena</i>	<i>Larrea tridentata</i>
<i>Bouteloua eriopoda</i>	<i>Yucca baccata</i>	<i>Asarum spp.</i>
<i>Eriogonum fasciculatum</i>	<i>Parthenocissus lacustris</i>	<i>Eriogonum spp.</i>
<i>Bouteloua hirsuta</i>	<i>Holcus setosus</i>	<i>Sphaeralcea spp.</i>
<i>Fraxinus trachocarpa</i>	<i>Valeriana parviflora</i>	<i>Parthenocissus</i>
<i>Eriogonum fasciculatum</i>	<i>Quercus turbinella</i>	<i>Solanum elaeagnifolium</i>
<i>Helianthus annuus</i>	<i>Viguiera longifolia</i>	<i>Euphorbia spp.</i>
<i>Helianthus annuus</i>	<i>Rhus aromatica</i>	<i>Salvia multicaulis</i>
<i>Urtica dioica</i>	<i>Larrea tridentata</i>	<i>Tellima angustifolia</i>
<i>Artemisia spp.</i>	<i>Gutierrezia serotena</i>	<i>Alliaria montana</i>
<i>Trifolium montanum</i>	<i>Opuntia Engelmannii</i>	
<i>Artemisia longicaulis</i>	<i>Opuntia imbricata</i>	
<i>Urtica dioica</i>	<i>Lythrum pallidum</i>	
<i>Koeleria cristata</i>	<i>Eriogonum fasciculatum</i>	
<i>Lythrum filiforme</i>	<i>Rhus microphylla</i>	
<i>Sporobolus filiformis</i>	<i>Condalia glauca</i>	
<i>Artemisia divaricata</i>	<i>Quercus spp.</i>	
	<i>Viguiera serotena</i>	

\* The above listed species compose approximately 95% of the plant species composition found within the Pinyon-Juniper Standard Habitat Type. Species are listed in order of dominance, as was determined from RLM, 1978 range census data.



SPECIES INVENTORY LIST FOR THE PSEUDORIPARIAN STANDARD HABITAT SITE

GRASSES

Distichlis spicata  
Cynodon dactylon  
Bouteloua eriopoda  
Erioneuron pulchellum  
Muhlenbergia porteri  
Bouteloua gracilis  
Sporobolus contractus  
Sporobolus airoides  
Setaria macrostachya  
Bothriochloa barbinoides  
Hilaria mutica  
Sporobolus flexuosus  
Bouteloua curtipendula  
Aristida spp.  
Panicum obtusum  
Aristida Wrightii  
Sporobolus cryptandrus  
Aristida adscenionis

SHRUBS AND TREES

Larrea divaricata  
Tamarix ramosissima  
Rhus microphylla  
Flourensia cernua  
Fallugia paradoxa  
Chilopsis linearis  
Prosopis glandulosa  
Gutierrezia sarothrae  
Hymenoclea monogyra  
Baccharis spp.  
Prosopis pubescens  
Brickellia laciniata  
Quercus spp.  
Berberis spp.  
Ephedra trifurca  
Brickellia californica  
Acacia constricta

FORBS

Ipomea spp.  
Solanum elaeagnifolium  
Euphorbia spp.  
Salsola kali  
Lepidium montanum  
Talinum spp.  
Allionia incarnata  
Croton pottsii  
Sphaeralcea spp.

\* The above listed species compose approximately 92.1% of the plant species composition found within the Pseudoriparian Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

GRASSES	SHRUBS AND TREES	FORBS
<i>Distichlis spicata</i>	<i>Larrea divaricata</i>	<i>Ipsomea</i> spp.
<i>Cynodon dactylon</i>	<i>Tamarix ramosissima</i>	<i>Solanum elaeagnifolium</i>
<i>Bouteloua eriopoda</i>	<i>Yucca microphylla</i>	<i>Euphorbia</i> spp.
<i>Lotonotus bicalcaratus</i>	<i>Flourensia cernua</i>	<i>Salsola kali</i>
<i>Halimolobos porteri</i>	<i>Halimolobos porteri</i>	<i>Lepidium montanum</i>
<i>Bouteloua gracilis</i>	<i>Chilopsis linearis</i>	<i>Talinum</i> spp.
<i>Sporobolus vaginatus</i>	<i>Prosopis glandulosa</i>	<i>Alliaria incarnata</i>
<i>Sporobolus airoides</i>	<i>Gutierrezia sarothrae</i>	<i>Croton porteri</i>
<i>Suaeda macrocarpa</i>	<i>Suaeda macrocarpa</i>	<i>Sphaeralcea</i> spp.
<i>Leptochloa parryioides</i>	<i>Suaeda</i> spp.	
<i>Helictes nutans</i>	<i>Prosopis pubescens</i>	
<i>Sporobolus illecebrus</i>	<i>Artemisia fasciculata</i>	
<i>Bouteloua curtipendula</i>	<i>Gutierrezia</i> spp.	
<i>Artemisia</i> spp.	<i>Suaeda</i> spp.	
<i>Panicum utrum</i>	<i>Ephedra</i> spp.	
<i>Artemisia Wrightii</i>	<i>Artemisia californica</i>	
<i>Sporobolus caryophyllus</i>	<i>Acaia canescens</i>	
<i>Artemisia adacantha</i>		

\* The above listed species compose approximately 92.1% of the plant species composition found within the Pseudotsuga Standard Habitat Site. Species are listed in order of dominance, as was determined from 21.1. 1978 range census data.



SPECIES INVENTORY LIST FOR THE RIPARIAN STANDARD HABITAT SITE

GRASSES	SHRUBS AND TREES	FORBS
Cynodon dactylon	Tamarix ramosissima	Ipomea spp.
Distichlis spicata	Prosopis pungens	Sphaeralcea spp.
Panicum obtusum	Flourensia cernua	Portulaca spp.
Hilaria mutica	Larrea divaricata	Solanum elaeagnifolium
Sporobolus Wrightii	Prosopis glandulosa	Hoffmanseggia glauca
Sporobolus airoides	Chilopsis linearis	Salsola kali
Muhlenbergia porteri	Gutierrezia sarothrae	Euphorbia albomarginata
Sporobolus cryptandrus	Dalea formosa	Baileya multiradiata
Muhlenbergia torreyi	Atriplex canescens	Allionia incarnata
Setaria macrostachya	Yucca elata	
Erioneuron pulchellum	Parthenium incanum	
Scleropogon brevifolius		

\* The above listed species compose approximately 96.6% of the plant species composition found within the Riparian Standard Habitat Site. Species are listed in order of dominance, as was determined from BLM, 1978 range transect data.

SPECIES INVENTORY LIST FOR THE SEABOARD STANDARD HABITAT SITE

PLANTS	SHRUBS AND TREES	GRASSES
Ipomoea spp.	Ipomoea racemosa	Cynodon dactylon
Schaefferia spp.	Ipomoea purpurea	Blachia spicata
Portulaca spp.	Ipomoea pes-caprae	Panicum polyanthum
Heliconia elaeagnifolia	Ipomoea diversifolia	Millettia indica
Holoptelechia glabra	Ipomoea glabra	Spotochloa Wrightii
Salicornia sp.	Ipomoea linearis	Spotochloa linearis
Euphorbia albertiana	Euphorbia corollata	Halimolobos porteri
Salicornia virginica	Salicornia peruviana	Spotochloa cyperoides
Alliaria lucida	Atriplex canescens	Halimolobos porteri
	Yucca elata	Setaria macrochaeta
	Portulaca linearis	Eriochloa polyantha
		Setaria verticillata

\* The above listed species compose approximately 95% of the plant species composition found within the Seaboard Standard Habitat Site. Species are listed in order of dominance, as was determined from 51M, 1978 range census data.



REPORT OF THE JURY OF THE DISTRICT COURT OF THE DISTRICT OF COLUMBIA  
IN THE CASE OF THE UNITED STATES OF AMERICA  
VS. JOHN EDGAR HOOVER  
JANUARY TERM, 1936  
CRIMINAL DISTRICT





PLANT SPECIES INVENTORY LISTS FOR POTENTIAL PLANT COMMUNITIES  
 OF STANDARD HABITAT SITES FOUND IN THE BUREAU OF LAND  
 MANAGEMENT, LAS CRUCES DISTRICT

PLANT SPECIES INVENTORY LISTS FOR POTENTIAL PLANT COMMUNITIES  
OF STANDARD HABITAT SITES FOUND IN THE BUREAU OF LAND  
MANAGEMENT, LAS CRUCES DISTRICT



POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE LARREA TRIDENTATA ROLLING UPLAND STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS & TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	17-25	Larrea divaricata	5-8	Perezia nana	4-9
Muhlenbergia porteri	8-16	Ephedra trifurca	2-5	Eriogonum spp.	4-8
Sporobolus cryptandrus	5-8	Yucca elata	2-5	Croton spp.	4-8
Bothriochloa barbinoides	4-13	Ceratoides lanata	1-4	Sphaeralcea spp.	3-7
Setaria macrostachya	4-13	Rhus microphylla	1-3	Psilostrophe tagetina	3-7
Digitaria californica	4-13	Gutierrezia sarothrae	1-3	Baileya multiradiata	2-4
Sporobolus flexuosus	4-6	Condalia spp.	1-2	Erodium cicutarium	1-3
Aristida spp.	2-6	Koeberlinia spinosa	0-2	Dithyrea Wislizeni	0-1
Hilaria mutica	2-4	Flourensia cernua	0-2	Senecio spp.	0-1
Sporobolus contractus	2-3	Parthenium incanum	0-1	Astragalus spp.	0-1
Eriogonum pulchellum	1-4	Krameria parvifolia	0-1	Solanum elaeagnifolium	0-1
Scleropogon brevifolius	1-2	Baccharis pteronioides	0-1	Descurainia spp.	0-1
Bouteloua curtipendula	1-2	Acacia constricta	0-1	Phacelia spp.	0-1
Bouteloua gracilis	1-2	Cacti	0-1	Mentzelia spp.	0-1
Enneapogon desvauxii	0-2	Artemisia filifolia	0-1	Plantago patagonica	0-1
Tridens muticus	0-1	Atriplex canescens	0-1		
Sporobolus airoides	0-1	Dalea scoparia	0-1		
Hilaria belangeri	0-1	Pluchea sericea	0-1		
Eragrostis intermedia	0-1	Fallugia paradoxa	0-1		
Leptochloa dubia	0-1	Prosopis glandulosa	0-1		
Heteropogon contortus	0-1	Dasyllirion spp.	0-1		
Tridens spp.	0-1	Agave spp.	0-1		
Panicum Hallii	0-1	Fouquieria splendens	0-1		





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE LARREA TRIDENTATA BREAKS STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
<i>Bouteloua eriopoda</i>	11-18	<i>Larrea divaricata</i>	8-12	<i>Perezia nana</i>	4-9
<i>Sporobolus cryptandrus</i>	11-15	<i>Yucca</i> spp.	2-4	<i>Psilostrophe tagetina</i>	4-9
<i>Sporobolus flexuosus</i>	11-13	<i>Pluchea sericea</i>	1-4	<i>Croton</i> spp.	4-8
<i>Muhlenbergia porteri</i>	9-17	<i>Ephedera trifurca</i>	1-3	<i>Descurainia</i> spp.	2-5
<i>Bothriochloa barbinoides</i>	3-9	<i>Atriplex canescens</i>	1-3	<i>Salsola kali</i>	2-5
<i>Digitaria californica</i>	3-9	<i>Gutierrezia sarothrae</i>	1-2	<i>Eriogonum</i> spp.	2-5
<i>Erioneuron pulchellum</i>	3-7	<i>Fallugia paradoxa</i>	1-2	<i>Sphaeralcea</i> spp.	2-5
<i>Setaria macrostachya</i>	2-9	<i>Koeberlinia spinosa</i>	0-2	<i>Phacelia</i> spp.	2-4
<i>Aristida</i> spp.	1-5	<i>Flourensia cernua</i>	0-2	<i>Plantago patagonica</i>	0-1
<i>Sporobolus Wrightii</i>	1-2	<i>Prosopis glandulosa</i>	0-1	<i>Dithyrea Wislizeni</i>	0-1
<i>Sporobolus giganteus</i>	1-2	<i>Parthenium incanum</i>	0-1	<i>Euphorbia</i> spp.	0-1
<i>Bouteloua gracilis</i>	1-2	<i>Krameria parvifolia</i>	0-1		
<i>Bouteloua curtipendula</i>	1-2	<i>Baccharis pteronioides</i>	0-1		
<i>Scleropogon brevifolius</i>	0-1	<i>Rhus microphylla</i>	1-2		
<i>Tridens muticus</i>	0-1	<i>Ceratoides lanata</i>	0-2		
<i>Enneapogon desvauxii</i>	0-1	<i>Acacia constricta</i>	0-1		
<i>Hilaria mutica</i>	0-1	<i>Opuntia</i> spp.	0-1		
<i>Leptochloa dubia</i>	0-1	<i>Condalia</i> spp.	0-1		
<i>Eragrostis intermedia</i>	0-1	<i>Artemisia filifolia</i>	0-1		
<i>Heteropogon contortus</i>	0-1	<i>Dalea scoparia</i>	0-1		
		<i>Dasyllirion Wheeleri</i>	0-1		
		<i>Agave</i> spp.	0-1		
		<i>Fouquieria splendens</i>	0-1		
		<i>Quercus turbinella</i>	0-1		





GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
<i>Bouteloua eriopoda</i>	21-26	<i>Fouquieria splendens</i>	6-10	<i>Eriogonum</i> spp.	1-5
<i>Muhlenbergia porteri</i>	11-17	<i>Yucca</i> spp.	5-9	<i>Plantago patagonica</i>	1-4
<i>Bouteloua curtipendula</i>	7-12	<i>Agave</i> spp.	5-9	<i>Sphaeralcea</i> spo.	1-3
<i>Bouteloua gracilis</i>	7-11	<i>Dasyilirion Wheeleri</i>	5-9	<i>Gaillardia</i> spp.	0-2
<i>Bothriochloa barbinoides</i>	5-11	<i>Nolina microcarpa</i>	2-5	<i>Croton</i> spp.	0-1
<i>Eragrostis intermedia</i>	5-9	<i>Rhus microphylla</i>	1-5	<i>Perezia nana</i>	0-1
<i>Leptochloa dubia</i>	5-9	<i>Gutierrezia sarothrae</i>	1-4	<i>Psilostrophe tagetina</i>	0-1
<i>Digitaria californica</i>	4-9	<i>Opuntia</i> spp.	1-3	Other perennials	4-9
<i>Muhlenbergia Metcalfei</i>	5-7	<i>Atriplex canescens</i>	1-2	Other annuals	2-5
<i>Heteropogon contortus</i>	3-7	<i>Larrea divaricata</i>	1-2		
<i>Setaria macrostachya</i>	3-7	<i>Dalea formosa</i>	0-2		
<i>Artistida</i> spp.	1-5	<i>Quercus turbinella</i>	0-2		
<i>Stipa neomexicana</i>	1-4	<i>Aloysia Wrightii</i>	0-2		
<i>Hilaria mutica</i>	1-3	<i>Fallugia paradoxa</i>	0-2		
<i>Panicum Hallii</i>	1-2	<i>Parthenium incanum</i>	0-2		
<i>Tridens elongata</i>	0-2	<i>Krameria parvifolia</i>	0-2		
<i>Tridens muticus</i>	0-2	<i>Juniperus</i> spp.	0-1		
<i>Erloneuron pulchellum</i>	0-2	<i>Koeberlinia spinosa</i>	0-1		
Annual grasses	0-2	<i>Flourensia cernua</i>	0-1		
<i>Enneapogon desvauxii</i>	0-1	<i>Condalia</i> spp.	0-1		
<i>Sporobolus cryptandrus</i>	0-1	<i>Eurotia lanata</i>	0-1		
<i>Hilaria belangeri</i>	0-1				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE MIXED SHRUB ROLLING UPLANDS STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	17-23	Yucca spp.	3-6	Eriogonum spp.	3-7
Muhlenbergia porteri	8-13	Dasyilirion Wheeleri	2-4	Perezia nana	3-7
Digitaria californica	4-11	Agave spp.	2-4	Psilostrophe tagetina	2-5
Bothriochloa barbinoides	4-11	Foquieria splendens	2-4	Sphaeralcea spp.	2-5
Hilaria mutica	6-10	Eurotia lanata	1-3	Baileya multiradiata	2-4
Setaria macrostachya	3-9	Gutierrezia sarothrae	1-3	Plantago patagonica	2-4
Bouteloua curtipendula	4-7	Opuntia spp.	1-3	Croton spp.	2-3
Sporobolus cryptandrus	4-6	Rhus microphylla	1-3	Mentzelia spp.	1-3
Aristida spp.	3-6	Nolina microcarpa	1-2	Euphorbia spp.	1-2
Sporobolus flexuosus	4-5	Acacia constricta	1-2	Dithyrea Wislizeni	1-2
Sporobolus contractus	4-5	Larrea divaricata	1-2	Erodium cicutarium	1-2
Bouteloua gracilis	3-5	Condalia spp.	1-2	Senecio spp.	0-1
Sporobolus giganteus	3-4	Ephedera trifurca	1-2	Astragalus spp.	0-1
Panicum obtusum	2-3	Artemisia filifolia	1-2	Solanum elaeagnifolium	0-1
Sporobolus airoides	2-3	Atriplex canescens	1-2	Salsola kali	0-1
Leptochloa dubia	1-2	Dalea scoparia	1-2	Descurainia spp.	0-1
Eragrostis intermedia	1-2	Prosopis glandulosa	0-1	Gaillardia spp.	0-1
Heteropogon contortus	1-2	Mimosa biuncifera	0-1		
Erioneuron pulchellum	1-2	Dalea formosa	0-1		
Scleropogon brevifolius	0-1	Parthenium incanum	0-1		
Tridens muticus	0-1	Krameria parvifolia	0-1		
Enneapogon desvauxii	0-1	Flourensia cernua	0-1		
Muhlenbergia Richardsonis	0-1	Baccharis pteronioides	0-1		
Chloris virgata	0-1	Chilopsis linearis	0-1		
Stipa neomexicana	0-1	Acacia greggii	0-1		
Muhlenbergia Metcalfei	0-1	Quercus turbinella	0-1		





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE MIXED SHRUB HILLS STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	25-30	Fouquieria splendens	5-9	Eriogonum spp.	1-5
Muhlenbergia porteri	11-14	Nolina microcarpa	3-7	Plantago patagonica	1-5
Bouteloua curtipendula	10-15	Agave spp.	3-7	Gaillardia spp.	0-2
Bouteloua gracilis	8-13	Dasyllirion Wheeleri	3-7	Sphaeralcea spp.	0-2
Muhlenbergia Metcalfei	7-9	Yucca spp.	3-7	Descurainia spp.	0-1
Bothriochloa barbinoides	5-10	Rhus microphylla	1-4	Senecio spp.	0-1
Eragrostis intermedia	4-9	Dalea formosa	1-3	Perezia nana	0-1
Leptochloa dubia	4-9	Fallugia paradoxa	1-3		
Setaria macrostachya	3-5	Gutierrezia sarothrae	1-3		
Digitaria californica	2-6	Opuntia spp.	1-3		
Heteropogon contortus	2-5	Quercus turbinella	1-3		
Stipa neomexicana	2-5	Juniperus spp.	1-3		
Hilaria mutica	2-4	Aloysia Wrightii	1-2		
Aristida spp.	1-4	Parthenium incanum	1-2		
Tridens elongatus	1-3	Krameria parvifolia	1-2		
Tridens muticus	1-3	Atriplex canescens	0-1		
Erioneuron pulchellum	1-2	Rhus aromatica	0-1		
Panicum Hallii	0-1	Cercocarpus montanus	0-1		
Bouteloua hirsuta	0-1	Garrya Wrightii	0-1		
Andropogon scoparius	0-1	Chrysothamnus nauseosus	0-1		
Muhlenbergia montana	0-1	Baccharis pteronioides	0-1		
Muhlenbergia Emersleyi	0-1				
Muhlenbergia Wrightii	0-1				
Lycurus phleoides	0-1				
Koeleria cristata	0-1				
Sitanion hystrix	0-1				
Panicum obtusum	0-1				
Sporobolus airoides	0-1				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE MIXED SHRUB MOUNTAIN STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	22-27	Fouquieria splendens	7-12	Plantago patagonica	1-5
Muhlenbergia porteri	11-17	Yucca spp.	6-11	Eriogonum spp.	1-5
Bouteloua gracilis	8-12	Dasyllirion Wheeleri	6-11	Sphaeralcea spp.	1-3
Bouteloua curtipendula	8-12	Agave spp.	6-11	Gaillardia spp.	0-1
Bothriochloa barbinoides	5-9	Nolina microcarpa	2-5	Descurainia spp.	0-1
Muhlenbergia Metcalfei	5-6	Rhus microphylla	1-4	Salsola kali	0-1
Leptochloa dubia	4-9	Gutierrezia sarothrae	1-3	Perezia nana	0-1
Eragrostis intermedia	4-9	Quercus turbinella	1-3	Psilostrophe tagetina	0-1
Digitaria californica	4-8	Opuntia spp.	1-3	Croton spp.	0-1
Heteropogon contortus	3-7	Atriplex canescens	1-2	Phacelia spp.	0-1
Setaria macrostachya	2-4	Dalea formosa	0-2	Baileya multiradiata	0-1
Aristida spp.	1-4	Juniperus spp.	0-2	Mentzelia spp.	0-1
Annuals	1-4	Aloysia Wrightii	0-2		
Hilaria mutica	1-3	Fallugia paradoxa	0-2		
Stipa neomexicana	1-3	Parthenium incanum	0-2		
Tridens elongatus	1-3	Krameria parvifolia	0-1		
Tridens muticus	1-3	Larrea divaricata	0-1		
Panicum Hallii	1-2	Pluchea sericea	0-1		
Erioneuron pulchellum	1-2				
Sporobolus flexuosus	0-1				
Sporobolus cryptandrus	0-1				
Other perennials	0-2				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE HALF SHRUB ROLLING UPLAND STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
<i>Bouteloua eriopoda</i>	24-32	<i>Ephedera trifurca</i>	4-8	<i>Eriogonum</i> spp.	5-9
<i>Sporobolus flexuosus</i>	8-12	<i>Yucca elata</i>	3-7	<i>Perezia nana</i>	4-9
<i>Sporobolus cryptandrus</i>	8-12	<i>Atriplex canescens</i>	1-4	<i>Croton</i> spp.	4-8
<i>Sporobolus contractus</i>	7-9	<i>Ceratoides lanata</i>	1-4	<i>Baileya multiradiata</i>	4-8
<i>Muhlenbergia porteri</i>	5-10	<i>Gutierrezia sarothrae</i>	1-3	<i>Erodium cicutarium</i>	3-7
<i>Setaria macrostachya</i>	4-9	<i>Opuntia</i> spp.	1-2	<i>Sphaeralcea</i> spp.	3-6
<i>Digitaria californica</i>	4-8	<i>Artemisia filifolia</i>	0-2	<i>Euphorbia</i> spp.	2-5
<i>Bothriochloa barbinoides</i>	4-8	<i>Dalea scoparia</i>	0-2	<i>Dithyrea Wislizeni</i>	2-5
<i>Hilaria mutica</i>	3-8	<i>Larrea divaricata</i>	1	<i>Salsola kali</i>	2-5
<i>Aristida</i> spp.	3-8	<i>Agave</i> spp.	0-1	<i>Psilostrophe tagetina</i>	2-4
<i>Sporobolus airoides</i>	3-4	<i>Koeberlinia spinosa</i>	0-1	<i>Senecio</i> spp.	1-3
<i>Sporobolus giganteus</i>	2-3	<i>Flourensia cernua</i>	0-1	<i>Astragalus</i> spp.	1-3
<i>Erioneuron pulchellum</i>	1-4	<i>Rhus microphylla</i>	0-1	<i>Solanum elaeagnifolium</i>	0-2
<i>Bouteloua curtipendula</i>	1-2	<i>Condalia</i> spp.	0-1	<i>Descurainia</i> spp.	0-2
<i>Bouteloua gracilis</i>	1-2	<i>Dasyilirion Wheeleri</i>	0-1	<i>Asclepias subverticillata</i>	0-1
<i>Panicum obtusum</i>	1-2	<i>Yucca</i> spp.	0-1	<i>Mentzelia</i> spp.	0-1
<i>Scleropogon brevifolius</i>	0-1	<i>Fallugia paradoxa</i>	0-1	<i>Plantago patagonica</i>	0-1
<i>Hilaria belangeri</i>	0-1				
<i>Tridens</i> spp.	0-1				
<i>Eragrostis intermedia</i>	0-1				
<i>Leptochloa dubia</i>	0-1				
<i>Heteropogon contortus</i>	0-1				
<i>Panicum Hallii</i>	0-1				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE GRASS ROLLING UPLANDS STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
<i>Bouteloua eriopoda</i>	20-25	<i>Yucca elata</i>	1-5	<i>Baileya multiradiata</i>	2-5
<i>Hilaria mutica</i>	8-13	<i>Ephedera trifurca</i>	1-5	<i>Perezia nana</i>	2-5
<i>Muhlenbergia porteri</i>	6-9	<i>Dasylistion wheeleri</i>	2-3	<i>Eriogonum</i> spp.	2-5
<i>Sporobolus airoides</i>	6-8	<i>Agave</i> spp.	2-3	<i>Sphaeralcea</i> spp.	1-4
<i>Aristida</i> spp.	3-7	<i>Fouquieria splendens</i>	2-3	<i>Croton</i> spp.	1-3
<i>Bothriochloa barbinoides</i>	3-7	<i>Atriplex canescens</i>	1-3	<i>Erodium cicutarium</i>	1-3
<i>Sporobolus cryptandrus</i>	4-6	<i>Gutierrezia sarothrae</i>	1-3	<i>Astragalus</i> spp.	1-3
<i>Sporobolus flexuosus</i>	4-6	<i>Opuntia</i> spp.	1-2	<i>Salsola kali</i>	1-2
<i>Bouteloua gracilis</i>	4-6	<i>Eurotia lanata</i>	0-2	<i>Senecio</i> spp.	1-2
<i>Bouteloua curtipendula</i>	4-6	<i>Dalea formosa</i>	0-1	<i>Plantago patagonica</i>	1-2
<i>Digitaria californica</i>	2-6	<i>Nolina microcarpa</i>	0-1	<i>Psilostrophe tagetina</i>	1-2
<i>Setaria macrostachya</i>	2-5	<i>Rhus microphylla</i>	0-1	<i>Euphorbia</i> spp.	0-1
<i>Sporobolus contractus</i>	2-3	<i>Quercus turbinella</i>	0-1	<i>Dithyrea wislizeni</i>	0-1
<i>Panicum obtusum</i>	2-3	<i>Artemisia filifolia</i>	0-1	<i>Salanum elaeagnifolium</i>	0-1
<i>Sporobolus giganteus</i>	2-3	<i>Dalea scoparia</i>	0-1	<i>Descurainia</i> spp.	0-1
<i>Erioneuron pulchellum</i>	1-3	<i>Prosopis glandulosa</i>	0-1	<i>Lesquerella</i> spp.	0-1
<i>Muhlenbergia torreyi</i>	1-2	<i>Acacia constricta</i>	0-1	Other perennials	2-6
<i>Scleropogon brevifolius</i>	1-2	<i>Flourensia cernua</i>	0-1	Other annuals	1-3
<i>Stipa neomexicana</i>	1-2	<i>Fallugia paradoxa</i>	0-1		
<i>Leptochloa dubia</i>	1-2	<i>Condalia</i> spp.	0-1		
<i>Eragrostis intermedia</i>	1-2	<i>Lycium</i> spp.	0-1		
<i>Stenon hystrix</i>	1-2				
<i>Panicum hallii</i>	0-1				
<i>Heteropogon contortus</i>	0-1				
<i>Muhlenbergia richardsonis</i>	0-1				
<i>Bouteloua hirsuta</i>	0-1				
<i>Hilaria jamesii</i>	0-1				
<i>Agropyron smithii</i>	0-1				
<i>Stipa</i> spp.	0-1				
<i>Andropogon scoparius</i>	0-1				
Annual grasses	1-2				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE GRASS HILL STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
<i>Bouteloua eriopoda</i>	15-20	<i>Fouquieria splendens</i>	4-6	<i>Eriogonum Wrightii</i>	1-5
<i>Bouteloua curtipendula</i>	11-16	<i>Yucca</i> spp.	3-6	<i>Plantago patagonica</i>	1-3
<i>Bouteloua gracilis</i>	10-14	<i>Dasyllirion Wheeleri</i>	3-6	<i>Castilleja</i> spp.	0-2
<i>Bothriochloa barbinoides</i>	5-10	<i>Agave</i> spp.	3-6	<i>Eriogonum</i> spp.	0-2
<i>Leptochloa dubia</i>	5-10	<i>Nolina microcarpa</i>	2-4	<i>Sphaeralcea</i> spp.	0-2
<i>Eragrostis intermedia</i>	5-10	<i>Fallugia paradoxa</i>	1-3	<i>Gaillardia</i> spp.	0-2
<i>Muhlenbergia porteri</i>	5-8	<i>Rhus aromatica</i>	1-3	<i>Descurainia</i> spp.	0-1
<i>Andropogon scoparius</i>	4-7	<i>Dalea formosa</i>	1-3	<i>Senecio</i> spp.	0-1
<i>Sitanion hystrix</i>	4-7	<i>Rhus microphylla</i>	1-3		
<i>Agropyron Smithii</i>	3-5	<i>Quercus turbinella</i>	1-3		
<i>Stipa</i> spp.	3-5	<i>Garrya Wrightii</i>	1-2		
<i>Digitaria californica</i>	2-5	<i>Cercocarpus montanus</i>	1-2		
<i>Heteropogon contortus</i>	2-5	<i>Gutierrezia sarothrae</i>	1-2		
<i>Muhlenbergia Metcalfei</i>	2-3	<i>Juniperus</i> spp.	1-2		
<i>Hilaria mutica</i>	1-4	<i>Baccharis pteronioides</i>	0-2		
<i>Panicum Hallii</i>	1-4	<i>Cetatoides lanata</i>	0-2		
<i>Aristida</i> spp.	1-4	<i>Lycium</i> spp.	0-2		
<i>Hilaria belangeri</i>	1-3	<i>Artemisia Bigelovii</i>	0-1		
<i>Stipa neomexicana</i>	1-3	<i>Atriplex canescens</i>	0-1		
<i>Setaria macrostachya</i>	1-2	<i>Opuntia</i> spp.	0-1		
<i>Bouteloua hirsuta</i>	0-2	<i>Aloysia Wrightii</i>	0-1		
<i>Hilaria Jamesii</i>	0-2	<i>Parthenium incanum</i>	0-1		
<i>Panicum obtusum</i>	0-1	<i>Krameria parvifolia</i>	0-1		
<i>Tridens elongatus</i>	0-1	<i>Chrysothamnus nauseosus</i>	0-1		
<i>Tridens muticus</i>	0-1				
<i>Erioneuron pulchellum</i>	0-1				
<i>Muhlenbergia montana</i>	0-1				
<i>Muhlenbergia Emersleyi</i>	0-1				
<i>Muhlenbergia Wrightii</i>	0-1				
<i>Lycurus phleoides</i>	0-1				
<i>Koeleria cristata</i>	0-1				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE GRASS MOUNTAIN STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	20-25	Yucca spp.	7-11	Eriogonum spp.	2-6
Bouteloua curtipendula	13-17	Dasyilirion Wheeleri	7-10	Plantago patigonica	1-5
Bouteloua gracilis	10-15	Agave spp.	7-10	Sphaeralcea spp.	1-3
Muhlenbergia porteri	8-12	Fouquieria splendens	7-10	Perezia nana	0-1
Bothriochloa barbinoides	4-9	Nolina microcarpa	2-4	Bailey multiradiata	0-1
Digitaria californica	4-8	Quercus turbinella	1-4	Psilostrophe tagetina	0-1
Leptochloa dubia	4-7	Gutierrezia sarothrae	1-3	Haplopappus spp.	0-1
Eragrostis intermedia	4-7	Rhus microphylla	1-3	Senecio spp.	0-1
Heteropogon contortus	3-6	Opuntia spp.	1-3		
Stipa neomexicana	2-5	Atriplex canescens	1-2		
Aristida spp.	2-4	Juniperus monosperma	0-3		
Hilaria mutica	1-5	Ceanothus Greggii	0-1		
Panicum Hallii	1-2	Cercocarpus montanus	0-1		
Tridens spp.	1-2	Dalea formosa	0-2		
Andropogon scoparius	0-1	Baccharis pteronioides	0-1		
Setaria macrostachya	0-1	Fallugia paradoxa	0-1		
Panicum obtusum	0-1	Lycium spp.	0-1		
Bouteloua hirsuta	0-1	Ceratoides lanata	0-1		
Sporobolus cryptandrus	0-1	Rhus aromatica	0-1		
Muhlenbergia montana	0-1	Garrya Wrightii	0-1		
Muhlenbergia Emersleyi	0-1				
Muhlenbergia Wrightii	0-1				
Sitanion hystix	0-1				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE GRASS FLAT STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Hilaria mutica	21-28	Rhus microphylla	2-5	Perezia nana	2-6
Sporobolus airoides	17-22	Chilopsis linearis	2-4	Croton spp.	2-4
Panicum obtusum	11-14	Condalia spp.	2-4	Salsola kali	1-4
Sporobolus giganteus	11-14	Acacia Greggii	2-4	Sphaeralcea spp.	1-3
Bouteloua eriopoda	8-11	Acacia constricta	2-4	Astragalus spp.	1-3
Bothriochloa barbinoides	3-7	Atriplex canescens	1-4	Eriogonum spp.	1-2
Digitaria californica	3-6	Gutierrezia sarothrae	1-4	Lesquerella spp.	1-2
Aristida spp.	2-6	Yucca elata	1-4	Baileya multiradiata	1-2
Bouteloua curtipendula	2-5	Ephedera trifurca	1-4	Erodium cicutarium	1-2
Sporobolus cryptandrus	2-4	Koeberlinia spinosa	1-2	Verbena spp.	0-1
Sporobolus flexuosus	2-4	Prosopis glandulosa	1-2	Phacelia spp.	0-1
Muhlenbergia porteri	2-3	Flourensia cernua	0-2	Plantago patagonica	0-1
Scleropogon brevifolius	1-5	Fallugia paradoxa	0-1	Annual Eriogonum spp.	0-1
Muhlenbergia Richardsonis	1-4	Optunia spp.	0-1	Senecio spp.	0-1
Setaria macrostachya	1-4	Yucca spp.	0-1	Euphorbia spp.	0-1
Chloris virgata	1-3			Dithyrea Wislizeni	0-1
Sporobolus contractus	1			Psilostrophe tagetina	0-1
Eragrostis intermedia	0-1				
Muhlenbergia torreyi	0-1				
Erioneuron pulchellum	0-1				





GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	20-25	Atriplex canescens	1-5	Annuals	1-5
Bouteloua curtipendula	10-15	Fallugia paradoxa	1-5	Perennials	1-3
Muhlenbergia porteri	5-10	Condalia spp.	1-5		
Bouteloua gracilis	5-10	Rhus microphylla	1-5		
Hilaria belangeri	5-10	Yucca spp.	1-5		
Hilaria mutica	5-10	Dasyllirion Wheeleri	1-5		
Eragrostis intermedia	5-10	Agave spp.	1-5		
Leptochloa dubia	5-10	Opuntia spp.	0-1		
Setaria macrostachya	5-10	Ceratoides lanata	0-3		
Bothriochloa barbinooides	5-10	Gutierrezia sarothrae	0-3		
Digitaria californica	5-10				
Heteropogon contortus	5-10				
Aristida spp.	5-10				
Tridens spp.	5-10				
Panicum Hallii	5-10				
Panicum obtusum	5-10				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE PROSOPIS JULIFLORA ROLLING UPLAND STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	20-27	Yucca elata	3-8	Eriogonum spp.	4-8
Hilaria mutica	8-13	Ephedera trifurca	3-8	Perezia nana	4-8
Sporobolus flexuosus	8-12	Atriplex canescens	1-4	Baileya multiradiata	4-7
Sporobolus cryptandrus	8-12	Eurotia lanata	1-4	Erodium cicutarium	3-7
Sporobolus airoides	8-10	Gutierrezia sarothrae	1-3	Croton spp.	3-7
Sporobolus contractus	7-9	Rhus microphylla	1-2	Sphaeralcea spp.	3-5
Sporobolus giganteus	7-9	Opuntia spp.	1-2	Euphorbia spp.	2-5
Muhlenbergia porteri	4-7	Artemisia filifolia	0-2	Dithyrea Wislizeni	2-5
Setaria macrostachya	3-7	Dalea scoparia	0-2	Salsola kali	1-4
Digitaria californica	3-7	Koeberlinia spinosa	0-1	Astragalus spp.	1-4
Bothriochloa barbinoides	3-7	Flourensia cernua	0-1	Senecio spp.	1-3
Aristida spp.	3-7	Fallugia paradoxa	0-1	Psilostrophe tagetina	1-2
Panicum obtusum	5-6	Chilopsis linearis	0-1	Solanum elaeagnifolium	0-2
Erioneuron pulchellum	1-3	Condalia spp.	0-1	Descurainia spp.	0-2
Bouteloua curtipendula	1-2	Acacia greggii	0-1	Asclepias subverticillata	0-1
Scleropogon brevifolius	0-2	Acacia constricta	0-1	Lesquerella spp.	0-1
Chloris virgata	0-1			Purshia patagonica	0-1
Muhlenbergia Richardsonis	0-1			Mentzelia spp.	0-1
Eragrostis intermedia	0-1				
Bouteloua gracilis	0-1				
Annual grasses	1-5				





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE PROSOPIS JULIFLORA DUNES STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
Bouteloua eriopoda	21-30	Yucca elata	4-9	Croton spp.	4-9
Sporobolus flexuosus	14-19	Ephedera trifurca	4-9	Eriogonum spp.	4-9
Sporobolus cryptandrus	14-19	Atriplex canescens	2-5	Perezia nana	4-9
Sporobolus contractus	14-18	Artemisia filifolia	1-5	Baileya multiradiata	4-9
Muhlenbergia porteri	4-9	Dalea scoparia	1-5	Erodium cicutarium	4-9
Setaria macrostachya	4-8	Eurotia lanata	1-4	Sphaeralcea spp.	4-8
Aristida spp.	4-8	Opuntia spp.	1-3	Euphorbia spp.	4-8
Digitaria californica	4-7	Gutierrezia sarothrae	1-3	Dithyrea Wislizeni	4-8
Bothriochloa barbinoides	4-7			Salsola kali	1-5
Sporobolus gigantea	4-5			Senecio spp.	1-4
Annual grasses	1-5			Astragalus spp.	1-4
Hilaria mutica	1-4			Solanum elaeagnifolium	1-4
Erioneuron pulchellum	1-4			Descurainia spp.	1-4
				Psilostrophe tagetina	1-2
				Plantago patagonica	0-1
				Lesquerella spp.	0-1
				Gaillardia spp.	0-1
				Other annuals	1-5
				Other perennials	1-5





POTENTIAL VEGETATION AND PERCENT COMPOSITIONS FOR THE PSEUDORIPARIAN STANDARD HABITAT SITE

GRASSES	% COMP.	SHRUBS AND TREES	% COMP.	FORBS	% COMP.
<i>Hilaria mutica</i>	13-18	<i>Larrea divaricata</i>	5-8	<i>Perezia nana</i>	3-7
<i>Sporobolus airoides</i>	11-14	<i>Rhus microphylla</i>	2-4	<i>Croton</i> spp.	3-7
<i>Sporobolus cryptandrus</i>	9-12	<i>Chilopsis linearis</i>	2-3	<i>Psilostrophe tagetina</i>	3-5
<i>Sporobolus flexuosus</i>	9-12	<i>Condalia</i> spp.	2-3	<i>Salsola kali</i>	2-5
<i>Panicum obtusum</i>	8-11	<i>Acacia greggii</i>	2-3	<i>Phacelia</i> spp.	2-5
<i>Sporobolus gigantea</i>	8-11	<i>Acacia constricta</i>	2-3	<i>Descurainia</i> spp.	2-4
<i>Bouteloua eriopoda</i>	6-10	<i>Atriplex canescens</i>	1-4	<i>Sphaeralcea</i> spp.	1-2
<i>Muhlenbergia porteri</i>	5-9	<i>Ephedera trifurca</i>	1-3	<i>Eriogonum</i> spp.	1-2
<i>Bothriochloa barbinoides</i>	2-6	<i>Gutierrezia sarothrae</i>	1-3	<i>Verbena</i> spp.	0-1
<i>Digitaria californica</i>	2-6	<i>Fallugia paradoxa</i>	1-3	<i>Plantago patagonica</i>	0-1
<i>Erioneuron pulchellum</i>	2-5	<i>Koeberlinia spinosa</i>	1-2	<i>Astragalus</i> spp.	0-1
<i>Bouteloua curtipendula</i>	2-4	<i>Pluchea sericea</i>	0-4	<i>Lesquerella</i> spp.	0-1
<i>Aristida</i> spp.	1-5	<i>Prosopis glandulosa</i>	0-2	<i>Euphorbia</i> spp.	0-1
<i>Setaria macrostachya</i>	1-5	<i>Yucca</i> spp.	0-2	<i>Dithyrea Wislizeni</i>	0-1
<i>Scleropogon brevifolius</i>	1-3	<i>Yucca elata</i>	0-1	<i>Baileya multiradiata</i>	0-1
<i>Sporobolus contractus</i>	0-1	<i>Flourensia cernua</i>	0-1	<i>Erodium cicutarium</i>	0-1
<i>Muhlenbergia Richardsonis</i>	0-2			Other perennials	3-9
<i>Chloris virgata</i>	0-2			Other annuals	2-5
<i>Eragrostis intermedia</i>	0-1				
<i>Enneapogon desvauxii</i>	0-1				
Other perennials	0-2				
Other annuals	0-2				











## BUREAU OF LAND MANAGEMENT - LAS CRUCES DISTRICT

## VERTEBRATE SPECIES OCCURRENCE LIST BY STANDARD HABITAT SITE

COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Prju Rup	Prju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
HERPTILES: Nomenclature in accordance with Stebbins (1954, 1966).																					
tiger salamander*	Ambystoma tigrinum																	2	3	1	
plains spadefoot	Scaphiopus bombifrons								1	1	1	1	3							2	
western spadefoot*	Scaphiopus hammondi	3	3	3	5	5		4								6		2	2	1	
Couch's spadefoot	Scaphiopus couchi	1	2	3					3	3	3	3	4								
great plains toad*	Bufo cognatus	2	2	2	1	1	2	3	4	4	4	4		3			1		1		
Texas toad*	Bufo speciosus	4	4	4					3	3		3						2	2	1	
red-spotted toad*	Bufo punctatus								3	3	3	3		1	2		2				
green toad*	Bufo debilis	1	1	1					2	2	2	2	3	4			1				
Woodhouse's toad	Bufo Woodhousei								3	3		3						2	1	2	
canyon tree frog	Hyla arenicolor																4	1	2	3	
leopard frog*	Rana pipiens																	1	1	1	
bull frog*	Rana catesbeiana																	1	1	1	
spiny softshell	Trylonyx spiniferus																	1	1	2	
western box turtle*	Terrapene ornata	4	4	4	4	4	4		2	2	3	2		1	5		2				
painted turtle	Chrysemys picta																	1	1	2	
pond slider	Pseudemys scripta																	2	2	1	
yellow mud turtle*	Kinosternon flavescens																	2	1	1	
Texas banded gecko	Coleonyx brevis				1	1	1		3	3	2	3				2					
great plains skink	Eumeces obsoletus	5	5	5	2	2	3	3	3	3	2	3	4			2		1	1		
many-lines skink	Eumeces multivirgatus	2	2	2	2	2	2	2	1	1	1	1	4	5		3	2	1	1		
western whiptail*	Cnemidophorus tigris	2	2	2	2	2	2	1	5	5	5	5	6	3		5	3	4	4		
checkered whiptail*	Cnemidophorus tessellatus	1	1	1					3	3	3	3		2	4						
New Mexican whiptail*	Cnemidophorus neomexicanus	6	6	6	5	5	5	4	3	3	5	2					1				
Chihuahuan whiptail*	Cnemidophorus exsanguis	5	5	5	3				3	3	1	3	4			1		2	2		

Numerals represent the Standard Habitat Sites (SHS) in which species occur and reflect the relative quality of habitat provided for each species by each SHS. Numeral 1 represents the highest quality of habitat found within the Las Cruces District, while larger numerals indicate relative decreases in habitat quality.

\* Species observed during the wildlife inventory.  
(E) Endangered species.





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Prju Rup	Prju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
desert-grassland whiptail*	Cnemidophorus uniparens	6	6	6	3	3	3	1	4	4	4	4	5	2	5		1		3		
little striped whiptail*	Cnemidophorus inornatus							1	3	3	2	3				2	4	5	4		
plateau whiptail*	Cnemidophorus velox										3					1		2	4		
round-tailed horned lizard*	Phrynosoma modestum	1	2	2	5	5	5	3	3	3	3	3	6	4			2				
short-horned lizard*	Phrynosoma douglasii	3	3	3	1	2	2				4					2					
Texas horned lizard*	Phrynosoma cornutum	3	3	3	6	5	5	4	2	2	2	1		6		7	3				
greater earless lizard*	Holbrookia texana	4	4	4	6	6	6	5	1	1	1	1					3	2	2		
lesser earless lizard*	Holbrookia maculata							3	2	2	2	2		2	1		4				
Clark's spiny lizard	Sceloporus clarki				4											3		2	1		
desert spiny lizard*	Sceloporus magister	3	3	3				4	2	2	1	2				6	5		5		
sagebrush lizard*	Sceloporus graciosus	1		3												2					
crevice spiny lizard*	Sceloporus poinsetti	3	3	3									2	4			1			4	
eastern fence lizard*	Sceloporus undulatus	1	1	1	2	2	2								4	3					
collared lizard*	Crotaphytus collaris	2	2	2	3	3	3		1	1	4	1	1	5			4				
leopard lizard*	Crotaphytus wislizenii	1	1	1	3	3	3	4	4	4	4	4	2	2	2	3		3			
tree lizard*	Urosaurus ornatus	4	4	4	4	4	4		5	5	5	5				2	3	1	1	5	
side-blotched lizard*	Uta stansburiana	2	2	2	6	6	6	4	3	3	7	3	8	5	1		8				
Texas blind snake	Leptotyphlops dulcis	3	3	3		4	4	5	2	2	1	2					3				
western blind snake	Leptotyphlops humilis	1	1	1					2	2	2	2					4		3		
massasauga	Sistrurus catenatus					3	3	1	2	2		2						3	3		
rock rattlesnake*	Crotalus lepidus				1			2			2					2					
western diamondback rattlesnake*	Crotalus atrox	1	1	1	4	3	3		2	2	2	2		5	2		3	3	3	5	
mojave rattlesnake*	Crotalus scutulatus	1	1	1					2	2	2	2					1	3	3		
prairie rattlesnake*	Crotalus viridis	3	3	3	4	4	4	5	2	2	2	1	4	3		5	3	3	3		
black-tailed rattlesnake*	Crotalus molossus	2	2	2	1	1	1		4	4	3	4				3					
western hognose snake*	Heterodon nasicus	5	5	5		4	4	4	3	3		3	6	2			1		1		
smooth green snake	Opheodrys vernalis								3	2	2	3						1	1		
corn snake	Elaphe guttata															2		1	1		
Trans-Pecos rat snake	Elaphe subocularis	3	3	2				1	4	4		4					2				
gopher snake*	Pituophis melanoleucus	1	1	1	5	5	5	4	3	3	3	3		2		5	4		5	6	
checkered garter snake	Thamnophis marciannus								2	2	2	2				3	4	1	1		
common garter snake*	Thamnophis sirtalis																3	1	1	2	
western terrestrial garter snake	Thamnophis elegans				4				3	3	3	3				5	2	1	1		





[illegible]





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Rash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Priju Rup	Priju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
great blue heron*	Ardea herodias																	1	1	1	
little blue heron	Florida caerulea																	1	1	1	
green heron	Butorides virescens																	1	1	2	
common egret	Casmerodius albus																	1	1	2	
snowy egret*	Leucophoyx thula																	2	2	1	
black-crowned night heron*	Nycticorax nycticorax		✓															1	1	2	
least bittern	Ixobrychus exilis																	2	2	1	
American bittern*	Botaurus lentiginosus																	2	2	1	
wood ibis	Mycteria americana																	2	2	1	
white-faced ibis*	Plegadis chihi																	2	2	1	
whistling swan	Olor columbianus																	2		1	
Canada goose	Branta canadensis																	2		1	
white-fronted goose	Anser albifrons																	2		1	
snow goose	Chen hyperborea																	2		1	
Ross' goose	Chen rossii																	2		1	
fulvous tree duck	Dendrocygna bicolor																	1	1	2	
mallard*	Anas platyrhynchos																	2	2	1	
Mexican duck*	Anas diazi																	2	2	1	
gadwall*	Anas strepera																	2	2	1	
pintail*	Anas acuta																	2	2	1	
green-winged teal*	Anas carolinensis																	2	2	1	
blue-winged teal*	Anas discors																	2	2	1	
cinnamon teal*	Anas cyanoptera																	2	2	1	
American wigeon*	Mareca americana																	2	2	1	
European wigeon*	Mareca penelope																	2	2	1	
northern shoveler*	Spatula clypeata																	2	2	1	
wood duck*	Aix sponsa																	1	2	2	
redhead	Aythya americana																			1	
ring-necked duck	Aythya collaris																			1	
canvasback	Aythya valisineria																			1	
lesser scaup	Aythya affinis																			1	
greater scaup	Aythya marila																			1	
common goldeneye	Bucephala clangula																	2	2	1	

DATE	DESCRIPTION	AMOUNT	BALANCE
1900	Jan 1		
1900	Jan 2		
1900	Jan 3		
1900	Jan 4		
1900	Jan 5		
1900	Jan 6		
1900	Jan 7		
1900	Jan 8		
1900	Jan 9		
1900	Jan 10		
1900	Jan 11		
1900	Jan 12		
1900	Jan 13		
1900	Jan 14		
1900	Jan 15		
1900	Jan 16		
1900	Jan 17		
1900	Jan 18		
1900	Jan 19		
1900	Jan 20		
1900	Jan 21		
1900	Jan 22		
1900	Jan 23		
1900	Jan 24		
1900	Jan 25		
1900	Jan 26		
1900	Jan 27		
1900	Jan 28		
1900	Jan 29		
1900	Jan 30		
1900	Jan 31		
1900	Feb 1		
1900	Feb 2		
1900	Feb 3		
1900	Feb 4		
1900	Feb 5		
1900	Feb 6		
1900	Feb 7		
1900	Feb 8		
1900	Feb 9		
1900	Feb 10		
1900	Feb 11		
1900	Feb 12		
1900	Feb 13		
1900	Feb 14		
1900	Feb 15		
1900	Feb 16		
1900	Feb 17		
1900	Feb 18		
1900	Feb 19		
1900	Feb 20		
1900	Feb 21		
1900	Feb 22		
1900	Feb 23		
1900	Feb 24		
1900	Feb 25		
1900	Feb 26		
1900	Feb 27		
1900	Feb 28		
1900	Feb 29		
1900	Mar 1		
1900	Mar 2		
1900	Mar 3		
1900	Mar 4		
1900	Mar 5		
1900	Mar 6		
1900	Mar 7		
1900	Mar 8		
1900	Mar 9		
1900	Mar 10		
1900	Mar 11		
1900	Mar 12		
1900	Mar 13		
1900	Mar 14		
1900	Mar 15		
1900	Mar 16		
1900	Mar 17		
1900	Mar 18		
1900	Mar 19		
1900	Mar 20		
1900	Mar 21		
1900	Mar 22		
1900	Mar 23		
1900	Mar 24		
1900	Mar 25		
1900	Mar 26		
1900	Mar 27		
1900	Mar 28		
1900	Mar 29		
1900	Mar 30		
1900	Mar 31		
1900	Apr 1		
1900	Apr 2		
1900	Apr 3		
1900	Apr 4		
1900	Apr 5		
1900	Apr 6		
1900	Apr 7		
1900	Apr 8		
1900	Apr 9		
1900	Apr 10		
1900	Apr 11		
1900	Apr 12		
1900	Apr 13		
1900	Apr 14		
1900	Apr 15		
1900	Apr 16		
1900	Apr 17		
1900	Apr 18		
1900	Apr 19		
1900	Apr 20		
1900	Apr 21		
1900	Apr 22		
1900	Apr 23		
1900	Apr 24		
1900	Apr 25		
1900	Apr 26		
1900	Apr 27		
1900	Apr 28		
1900	Apr 29		
1900	Apr 30		
1900	May 1		
1900	May 2		
1900	May 3		
1900	May 4		
1900	May 5		
1900	May 6		
1900	May 7		
1900	May 8		
1900	May 9		
1900	May 10		
1900	May 11		
1900	May 12		
1900	May 13		
1900	May 14		
1900	May 15		
1900	May 16		
1900	May 17		
1900	May 18		
1900	May 19		
1900	May 20		
1900	May 21		
1900	May 22		
1900	May 23		
1900	May 24		
1900	May 25		
1900	May 26		
1900	May 27		
1900	May 28		
1900	May 29		
1900	May 30		
1900	May 31		
1900	Jun 1		
1900	Jun 2		
1900	Jun 3		
1900	Jun 4		
1900	Jun 5		
1900	Jun 6		
1900	Jun 7		
1900	Jun 8		
1900	Jun 9		
1900	Jun 10		
1900	Jun 11		
1900	Jun 12		
1900	Jun 13		
1900	Jun 14		
1900	Jun 15		
1900	Jun 16		
1900	Jun 17		
1900	Jun 18		
1900	Jun 19		
1900	Jun 20		
1900	Jun 21		
1900	Jun 22		
1900	Jun 23		
1900	Jun 24		
1900	Jun 25		
1900	Jun 26		
1900	Jun 27		
1900	Jun 28		
1900	Jun 29		
1900	Jun 30		
1900	Jul 1		
1900	Jul 2		
1900	Jul 3		
1900	Jul 4		
1900	Jul 5		
1900	Jul 6		
1900	Jul 7		
1900	Jul 8		
1900	Jul 9		
1900	Jul 10		
1900	Jul 11		
1900	Jul 12		
1900	Jul 13		
1900	Jul 14		
1900	Jul 15		
1900	Jul 16		
1900	Jul 17		
1900	Jul 18		
1900	Jul 19		
1900	Jul 20		
1900	Jul 21		
1900	Jul 22		
1900	Jul 23		
1900	Jul 24		
1900	Jul 25		
1900	Jul 26		
1900	Jul 27		
1900	Jul 28		
1900	Jul 29		
1900	Jul 30		
1900	Jul 31		
1900	Aug 1		
1900	Aug 2		
1900	Aug 3		
1900	Aug 4		
1900	Aug 5		
1900	Aug 6		
1900	Aug 7		
1900	Aug 8		
1900	Aug 9		
1900	Aug 10		
1900	Aug 11		
1900	Aug 12		
1900	Aug 13		
1900	Aug 14		
1900	Aug 15		
1900	Aug 16		
1900	Aug 17		
1900	Aug 18		
1900	Aug 19		
1900	Aug 20		
1900	Aug 21		
1900	Aug 22		
1900	Aug 23		
1900	Aug 24		
1900	Aug 25		
1900	Aug 26		
1900	Aug 27		
1900	Aug 28		
1900	Aug 29		
1900	Aug 30		
1900	Aug 31		
1900	Sep 1		
1900	Sep 2		
1900	Sep 3		
1900	Sep 4		
1900	Sep 5		
1900	Sep 6		
1900	Sep 7		
1900	Sep 8		
1900	Sep 9		
1900	Sep 10		
1900	Sep 11		
1900	Sep 12		
1900	Sep 13		
1900	Sep 14		
1900	Sep 15		
1900	Sep 16		
1900	Sep 17		
1900	Sep 18		
1900	Sep 19		
1900	Sep 20		
1900	Sep 21		
1900	Sep 22		
1900	Sep 23		
1900	Sep 24		
1900	Sep 25		
1900	Sep 26		
1900	Sep 27		
1900	Sep 28		
1900	Sep 29		
1900	Sep 30		
1900	Sep 31		
1900	Oct 1		
1900	Oct 2		
1900	Oct 3		
1900	Oct 4		
1900	Oct 5		
1900	Oct 6		
1900	Oct 7		
1900	Oct 8		
1900	Oct 9		
1900	Oct 10		
1900	Oct 11		
1900	Oct 12		
1900	Oct 13		
1900	Oct 14		
1900	Oct 15		
1900	Oct 16		
1900	Oct 17		
1900	Oct 18		
1900	Oct 19		
1900	Oct 20		
1900	Oct 21		
1900	Oct 22		
1900	Oct 23		
1900	Oct 24		
1900	Oct 25		
1900	Oct 26		
1900	Oct 27		
1900	Oct 28		
1900	Oct 29		
1900	Oct 30		
1900	Oct 31		
1900	Nov 1		
1900	Nov 2		
1900	Nov 3		
1900	Nov 4		
1900	Nov 5		
1900	Nov 6		
1900	Nov 7		
1900	Nov 8		
1900	Nov 9		
1900	Nov 10		
1900	Nov 11		
1900	Nov 12		
1900	Nov 13		
1900	Nov 14		
1900	Nov 15		
1900	Nov 16		
1900	Nov 17		
1900	Nov 18		
1900	Nov 19		
1900	Nov 20		
1900	Nov 21		
1900	Nov 22		
1900	Nov 23		
1900	Nov 24		
1900	Nov 25		
1900	Nov 26		
1900	Nov 27		
1900	Nov 28		
1900	Nov 29		
1900	Nov 30		
1900	Dec 1		
1900	Dec 2		
1900	Dec 3		
1900	Dec 4		
1900	Dec 5		
1900	Dec 6		
1900	Dec 7		
1900	Dec 8		
1900	Dec 9		
1900	Dec 10		
1900	Dec 11		
1900	Dec 12		
1900	Dec 13		
1900	Dec 14		
1900	Dec 15		
1900	Dec 16		
1900	Dec 17		
1900	Dec 18		
1900	Dec 19		
1900	Dec 20		
1900	Dec 21		
1900	Dec 22		
1900	Dec 23		
1900	Dec 24		
1900	Dec 25		
1900	Dec 26		
1900	Dec 27		
1900	Dec 28		
1900	Dec 29		
1900	Dec 30		
1900	Dec 31		



[illegible]





[illegible]

INSTRUCTIONS										DATE									
1. Fill in the following information:										2. Fill in the following information:									
a. Name of the person or organization										b. Address of the person or organization									
c. City and State										d. Zip Code									
e. Date of birth										f. Date of death									
g. Date of marriage										h. Date of divorce									
i. Date of remarriage										j. Date of remarriage									
k. Date of remarriage										l. Date of remarriage									
m. Date of remarriage										n. Date of remarriage									
o. Date of remarriage										p. Date of remarriage									
q. Date of remarriage										r. Date of remarriage									
s. Date of remarriage										t. Date of remarriage									
u. Date of remarriage										v. Date of remarriage									
w. Date of remarriage										x. Date of remarriage									
y. Date of remarriage										z. Date of remarriage									
aa. Date of remarriage										ab. Date of remarriage									
ac. Date of remarriage										ad. Date of remarriage									
ae. Date of remarriage										af. Date of remarriage									
ag. Date of remarriage										ah. Date of remarriage									
ai. Date of remarriage										aj. Date of remarriage									
ak. Date of remarriage										al. Date of remarriage									
am. Date of remarriage										an. Date of remarriage									
ao. Date of remarriage										ap. Date of remarriage									
aq. Date of remarriage										ar. Date of remarriage									
as. Date of remarriage										at. Date of remarriage									



COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Prju Rup	Prju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
Thayer's gull	Larus thayeri																			1	
ring-billed gull	Larus delawarensis																			1	
Franklin's gull	Larus pipixcan								2	2		2								1	
Bonaparte's gull	Larus philadelphia																			1	
Forster's tern*	Sterna forsteri																			1	
black tern*	Chlidonias niger																			1	
band-tailed pigeon*	Columba fasciata				3											1		2	2	1	
rock dove	Columba livia																				1
white-winged dove*	Zenaidura asiatica	3	3	3					4	4		4		4		5		2	1	2	
mourning dove*	Zenaidura macroura	4	4	4	7	7	7	6	5	5	8	5	8	2	2	9	1	1	1	3	
ground dove*	Columbigallina passerina	3	3	3								4					2	1	1	2	
Inca dove	Scardafella inca	5	5	5		6	4	3	2	2	7	1	7				2	2	1	2	
yellow-billed cuckoo	Coccyzus americanus																	1	2		
roadrunner*	Geococcyx californianus																	1	2		1
groove-billed ani	Crotophaga sulcirostris								4	4		3					2	1	1		
barn owl*	Tyto alba	1	1	1														3	3	2	
screech owl	Otus asio																	3	3		
great horned owl*	Bubo virginianus	2	2	2					2	2		2		3		4	2	1	1		
burrowing owl*	Speotyto cunicularia	3	3	3		5	5	4	2	2		2	4	2	1		6	1	1		
pygmy owl*	Glaucidium gnoma															3	2	1	1		
long-eared owl*	Asio otus	4	4	4		5	5	5	1	1	1	1	6	2	2		3				
short-eared owl*	Asio flammeus	4	4	4					1	1	2	1		3	2		3				
spotted owl	Strix occidentalis				3						3					2		1			
saw-whet owl	Aegolius acadicus				3						3					2		1			
whiskered owl	Otus trichopsis				3						4					2		1			
flamulated owl	Otus flammeolus				3						4					2		1			
elf owl	Micrathene whitneyi	1	1	1	2						4					3		2			
rufous owl	Glaucidium brasilianum	3	3	3													3	2	1		
whip-poor-will	Caprimulgus vociferus				3											4	2	1	1	2	
Ridgway's whip-poor-will	Caprimulgus ridgwayi				3						3					4	2	1	1	2	
poor-will*	Phalaenoptilus nuttallii	2	2	2	3				2	2	2	2				3	1	1	1	2	
common nighthawk*	Chordeiles minor	3	3	3	4	4	4	4	4	4	4	4	4	5	5	5	2	1	1	1	
lesser nighthawk*	Chordeiles acutipennis	3	3	3	4	4	4	4	4	4	4	4	4	4	4	5	2	1	1	1	





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Priju Rup	Priju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
white-throated swift*	Aeronautes saxatalis				3						4					3	2	1	1		
Vaux's swift	Chaetura vauxi															3		1	2		
black-chinned hummingbird*	Archilochus alexandri	6	6	6	3	3	3	4			5					5	2	1	1		
Costa's hummingbird*	Calypte costae	2	2	2	3				1	1	1	1	2	3	4		1				
Anna's hummingbird	Calypte anna				3						2						2	1	1		
broad-tailed hummingbird*	Selasphorus platycercus	4	4	4					3	3		3		4				1	2		
rufous hummingbird*	Selasphorus rufus	4	4	4	5	5	5		3	3	3	3		4	4		2	1	1		
calliope hummingbird	Stellula calliope	4	4	4	1						3					2		1			
Rivoli's hummingbird*	Eugenes fulgens	4	4	4	1						2					2		3			
blue-throated hummingbird*	Lampornis clemenciae				3						4					4	2	1	1		
broad-billed hummingbird	Cyanthus latirostris													4			3	1	2		
belted kingfisher*	Megasceryle alcyon																	1	2	3	
red-shafted flicker*	Colaptes cafer	5	5	5	4	5	5	6	5	5	4	5	6	6		3	2	1	1	6	
acorn woodpecker*	Melanerpes formicivorus	5	5	5	3			4	5	5	3					1		2	2		
Lewis' woodpecker	Asyndesmus lewis				3						3					1		2	2		
yellow-bellied sapsucker*	Sphyrapicus varius				3											3		1		2	
Williamson's sapsucker	Sphyrapicus thyroideus				2											2		1			
hairy woodpecker*	Dendrocopos villosus															2		1	2		
downy woodpecker	Dendrocopos pubescens				3											3		1	2		
ladder-backed woodpecker*	Dendrocopos scalaris	5	5	5	2						6			3	2	4		1	1	6	
eastern kingbird*	Tyrannus tyrannus	2	2	2					3	3		3	3	4			1	2	1		
western kingbird*	Tyrannus verticalis	3	3	3	6	6	6	5	4	4	7	4	7	3	2	8	2	1	1		
Cassin's kingbird*	Tyrannus vociferans	3	3	3	2				3	3	2	3		3		2	1	1	1		
scissor-tailed flycatcher	Muscivora forficata	1	1	1					2	2	2	2		3	3		4				
ash-throated flycatcher*	Myiarchus cinerascens	2	2	2	6	6	6	7	4	4	5	4	5	2	2	3	2	1	1	3	
eastern phoebe*	Sayornis phoebe																				1
black phoebe*	Sayornis nigricans																2	1	1	3	
Say's phoebe*	Sayornis saya	3	3	3	6	6	6	4	5	5	7	5	7	8	1	2	4	4	4	4	
Trail's flycatcher*	Empidonax traillii																2	3	1		
buff-breasted flycatcher	Empidonax fulvifrons				1						3					2		1		3	
Hammond's flycatcher	Empidonax hammondi																	1	2		
beardless flycatcher*	Camptostoma lamberbe	4	4	4	3												3	1	2		
duky flycatcher	Empidonax oberholseri															3	2	1	1		





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Prju Rup	Prju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitate
gray flycatcher	Empidonax wrightii				2						3					1		2			
western flycatcher*	Empidonax difficilis				2						3			4		1		1	3		
Coues' flycatcher	Contopus pertinax				1						2					1		2			
western wood pewee*	Contopus sordidulus	3	3	3	6						5			4		2		1	1	6	
olive-sided flycatcher*	Nuttallornis borealis	4	4	4	2						3			2		1				2	
vermillion flycatcher	Pyrocephalus rubinus																2	1	1	2	
horned lark*	Eremophila alpestris	4	4	4		8	8	2	1	1	8	1	4	3	7		6			5	
violet-green swallow*	Tachycineta thalassina							1			4			3	5	2		2			
tree swallow*	Iridoprocne bicolor															3		1	1	2	
bank swallow*	Riparia riparia	3	3	3														1	1	2	
rough-winged swallow*	Stelgidopteryx ruficollis													3				2	2	1	
barn swallow*	Hirundo rustica	4	4	4										3				2	2	1	
cliff swallow*	Petrochelidon pyrrhonota	3	3	3														1	1	2	
purple martin	Progne subis				2						3					1					
scrub jay*	Aphelocoma coerulescens	5	5	5	3			4			4					1		2			
Steller's jay*	Cyanocitta stelleri															2		1		2	
Mexican jay*	Aphelocoma ultramarina															1		2			
pinyon jay*	Gymnorhinus cyanocephalus				2	3	3				5					1		4			
Clark's nutcracker	Nucifraga columbiana															1		2			
common raven*	Corvus corax																				1
white-necked raven*	Corvus cryptoleucus							2	1	1		1		2		4	3	3	3		
common crow	Corvus brachyrhynchos																				1
mountain chickadee*	Parus gambeli				3						2					1					
Mexican chickadee	Parus sclateri				3						2					1					
plain titmouse*	Parus inornatus				2						3					1		4			
bridled titmouse*	Parus wollweberi															1	3	2	2		
verdin*	Auriparus flaviceps	4	1	4								5		4	2		3		3		
common bushtit*	Psaltiriparus minimus	7	7	7	1	2		6			5			4		3	2	2	1		
black-eared bushtit	Psaltiriparus melanotis				2											1					
white-breasted nuthatch*	Sitta carolinensis				2											1		3	4		
red-breasted nuthatch*	Sitta canadensis				2											1		3			
pygmy nuthatch	Sitta pygmaea				2											1		3			
brown creeper	Certhia familiaris															1		2			





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Priju Rup	Priju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
dipper*	Cinclus mexicanus				3													1	2		
house wren*	Troglodytes aedon																				1
Bewick's wren*	Thryomanes bewickii	4	4	4				2								1		3			
cactus wren*	Campylorhynchus brunneicapillus	5	5	5	1	1	1	3	6	6	7	6	6	5	2	7	4	5	4	8	
long-billed marsh wren	Telmatorhynchus palustris																				
canyon wren*	Catherpes mexicanus	5	5	5	1	1	1	4	6	6	3	6	6	7	7	2	2	2	2		
rock wren*	Salpinctes obsoletus	2	2	2	1	4	4	5	6	6	1	6	3			4	5	5	5		
mockingbird*	Mimus polyglottos																				1
catbird	Dumetella carolinensis																2	1	1	2	
brown thrasher*	Toxostoma rufum				2											1					
curve-billed thrasher*	Toxostoma curvirostre	4	4	4	4	4	4	5	5	5	4	5	5	2	1	6	3	3	3		
crissal thrasher*	Toxostoma dorsale	3	3	3	4	4	1	5	3	3		3		3	1	4	2	2	2		
Bendire's thrasher*	Toxostoma bendirei	1	1	1	2	2	2	2						1			3	3	3		
sage thrasher*	Oreoscoptes montanus				1	2	2	3								4					
American robin*	Turdus migratorius				3						4					2	5	1	1		
Townsend's solitaire*	Myadestes townsendi				2				4	4	1	4				3					
wood thrush*	Hylocichla ustulata				3											1		2			
hermit thrush*	Hylocichla guttata				3											1		2			
Swainson's thrush*	Hylocichla ustulata				3											1		2			
eastern bluebird	Sialia sialis				2						2					1					
western bluebird*	Sialia mexicana				2						2					1					
mountain bluebird*	Sialia curracoides								2	3	2	3				1	2	4			
blue-gray gnatcatcher*	Poliophtila caerulea	3	3	3											4	2	1				
black-tailed gnatcatcher*	Poliophtila melanura	2	1	2													2				
golden-crowned kinglet	Regulus satrapala				2						4					1		3			
ruby-crowned kinglet*	Regulus calendula	6	6	6			3				3					4	2	5		1	
water pipit*	Anthus spinoletta								3	3	3	3		4			4	2	2	1	
Sprague's pipit	Anthus spragueii								1	1	2	1					3				
cedar waxwing*	Bombycilla cedrorum				3											1	4	2			
phainopepla*	Phainopepla nitens				1	4	4				3					2	6	5	5		
loggerhead shrike*	Lanius ludovicianus																				1
starling*	Sturnus vulgaris																				1
Bell's vireo*	Vireo bellii	5	5	5	6	6	6	7							4	7	2	3	1		





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Puju Rup	Puju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
Hutton's vireo*	Vireo huttoni				2						3					1					
gray vireo*	Vireo vicinior				2											1	2				
solitary vireo*	Vireo solitarius																	1	3		
Philadelphia vireo*	Vireo philadelphicus																	1	1		
warbling vireo*	Vireo gilvus																	1	2		
black-and-white warbler	Mniotilta varia																2	1	1		
Tennessee warbler	Vermivora peregrina															2		1			
orange-crowned warbler*	Vermivora celata	6	6	6	4	5	5	3			5						2	1	1		
Nashville warbler*	Vermivora ruficapilla							2								3	2	1			
Virginia's warbler*	Vermivora virginiae				3											3	2	1	1		
Lacy's warbler*	Vermivora luciae																3	1	2		
parula warbler	Parula americana															2		1			
yellow warbler*	Dendroica petechia	4	4	4	4	4	4							4	4	4	3	1	2		
Myrtle warbler	Dendroica coronata										2					1		2			
Audubon's warbler*	Dendroica auduboni	1	2	2	5	5	5	5	6	6	4	6	6		5	5	4	4	4	3	
black-throated gray warbler*	Dendroica nigrescens				3						2					1			4		
Townsend's warbler*	Dendroica townsendi										2					3	1	2	2		
black-throated green warbler	Dendroica virens				2						3					1					
Grace's warbler*	Dendroica graciae				3											1		2		3	
ovenbird	Seiurus aurocapillus																2	1	1		
northern waterthrush	Seiurus noveboracensis																	2	2	1	
McGillivray's warbler*	Oporornis tolmiei	4	4	4							5				3	3	1	2	2		
red-faced warbler	Oardellina rubrifrons				3						2					1					
Wilson's warbler*	Wilsonia pusilla	5	5	5	8			6			8			4		6	3	1	2	7	
American redstart	Setophaga ruticilla																3	1	2		
painted redstart	Setophaga picta				2						3					1					
yellowthroat	Geothlypis trichas																	2	2	1	
yellow-breasted chat	Icteria virens																3	2	1	3	
house sparrow	Passer domesticus																				1
eastern meadowlark	Sturnella magna	3						2	1	1	4	1		6	5						
western meadowlark*	Sturnella neglecta	3	4	4	7	7	7	2	1	1	4	1	4	6	5						
yellow-headed blackbird*	Xanthocephalus xanthocephalus											4		3				2	2	1	
red-winged blackbird*	Agelaius phoeniceus	3	3	3								3						1	1	2	

GENERAL INFORMATION										SPECIFIC INFORMATION									
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280
281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360
361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380
381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400
401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440
441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
601	602	603	604	605	606	607	608	609	610	611	612	613	614	615	616	617	618	619	620
621	622	623	624	625	626	627	628	629	630	631	632	633	634	635	636	637	638	639	640
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
661	662	663	664	665	666	667	668	669	670	671	672	673	674	675	676	677	678	679	680
681	682	683	684	685	686	687	688	689	690	691	692	693	694	695	696	697	698	699	700
701	702	703	704	705	706	707	708	709	710	711	712	713	714	715	716	717	718	719	720
721	722	723	724	725	726	727	728	729	730	731	732	733	734	735	736	737	738	739	740
741	742	743	744	745	746	747	748	749	750	751	752	753	754	755	756	757	758	759	760
761	762	763	764	765	766	767	768	769	770	771	772	773	774	775	776	777	778	779	780
781	782	783	784	785	786	787	788	789	790	791	792	793	794	795	796	797	798	799	800
801	802	803	804	805	806	807	808	809	810	811	812	813	814	815	816	817	818	819	820
821	822	823	824	825	826	827	828	829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852	853	854	855	856	857	858	859	860
861	862	863	864	865	866	867	868	869	870	871	872	873	874	875	876	877	878	879	880
881	882	883	884	885	886	887	888	889	890	891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910	911	912	913	914	915	916	917	918	919	920
921	922	923	924	925	926	927	928	929	930	931	932	933	934	935	936	937	938	939	940
941	942	943	944	945	946	947	948	949	950	951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970	971	972	973	974	975	976	977	978	979	980
981	982	983	984	985	986	987	988	989	990	991	992	993	994	995	996	997	998	999	1000



COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Priju Rup	Priju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
Brewer's blackbird*	Euphagus cyanocephalus				5	5	5	2				3			4			1	1	2	
boat-tailed grackle	Cassidix mexicanus	2	2	2				3						3	4		1				
brown-headed cowbird*	Molothrus ater	3	3	3					6	6	7	6			5	4	2	1	1	2	
bronzed cowbird	Tangavius aeneus																3	1	2	3	
orchard oriole	Icterus spurius																3	1	2		
hooded oriole	Icterus cucullatus																3	2	1		
Scott's oriole*	Icterus parisorum	5	7	7	1	2	1	2	5	5	3	5	6	6	1	3	3	2	2	4	
Bullock's oriole*	Icterus bullockii	4	4	4	6			4			6			5	4		3	1	2		
western tanager*	Piranga ludoviciana	5	5	5	3					4				4	4			2	2		
summer tanager*	Piranga rubra															3	1	2			
hepatic tanager*	Piranga flava				2											1		3	3		
cardinal	Richmondia cardinalis	7	7	7	5	6	6	4	3	3	5	3	4	4			2	1	1		
pyrrhuloxia*	Pyrrhuloxia sinuata	3	3	3	6	6	6	3	5	5	5	5	5	4	3	4	1	2	2		
rose-breasted grosbeak*	Phoebastria ludoviciana	2	2	2	1	1	1	3													
black-headed grosbeak*	Phoebastria melanocephalus				1	1	1				4			4		3		2	2		
blue grosbeak*	Guiraca caerulea	2	2	2	6	6	6	3	6	6	6	6	6	5	4	7	4	1	1	3	
evening grosbeak*	Hesperiphona vespertina													3		2	3	1	1		
indigo bunting	Passerina cyanea																				1
lazuli bunting	Passerina amoena	4	4	4				5									3	1	2		
varied bunting	Passerina versicolor	1	1	1				2									3	2	2		
painted bunting	Passerina ciris	3	3	3				3									2	1	1		
dickcissel*	Spiza americana	4	4	4				1	2	2		1		3			5				
purple finch	Carpodacus purpureus				3	3	3	2								1	4				
Cassin's finch*	Carpodacus cassinii				4			5								1	3	2	2		
house finch*	Carpodacus mexicanus																				1
pine siskin*	Spinus pinus				2				3		3					1					
American goldfinch	Spinus tristis	2	2	2	6	6	6	3	1	1	1	1		5			4		4		
lesser goldfinch*	Spinus psaltria				3											2	4	1	1		
Lawrence's goldfinch	Spinus lawrencei	4	4	4				5	3	3	3	3						2	2	1	
red crossbill	Loxia curvirostra				2											1					
rufous-sided towhee*	Pipilo erythrophthalmus	4	4	4	1	2	2	4	4	4	2	4		4	4	2	4		4	3	
green-tailed towhee*	Chlorura chlorura	2	2	2	4	3	3	4			6			7	5		1				
brown towhee*	Pipilo fuscus	8	8	8	2	8	4	8	6	6	5	6	6	7	7	1	3	3			





COMMON NAME	SCIENTIFIC NAME	Lar. Rup	Lar. Breaks	Lar. Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Rash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Pru Rup	Pru Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
Lark bunting*	<i>Calamospiza melanocorys</i>	4	4	4	6	5	5	2	3	2		1	4	2	5						
Savannah sparrow*	<i>Passerculus sandwichensis</i>	3	3	3				5	2	2	2	1					3	4	4		
Baird's sparrow	<i>Ammodramus bairdii</i>							2	1	1	1	1									
Vesper sparrow*	<i>Pooecetes gramineus</i>	3	4	3	5	5	5	1	2	2	3	2		6	7	7					
Lark sparrow*	<i>Chondestes grammacus</i>	6	7	6	8	5	5	7	2	2	5	2	6	1					4	3	
Rufous-crowned sparrow*	<i>Aimophila ruficeps</i>	8	8	8	4	5	5	5	4	4	1	4	4	2	9	3	7	6	6		
Botteri's sparrow*	<i>Aimophila botterii</i>	3	3	3				4	2	2		2	1				1				
Cassin's sparrow*	<i>Aimophila cassinii</i>	3	3	3					1	1	1	1		5			2			4	
Black-throated sparrow*	<i>Amphispiza bilineata</i>	1	7	7	2	6	3	5	5	5	6	5	7	10	4	8	4	9	9	10	
Sage sparrow*	<i>Amphispiza belli</i>				3	4	7		1	3	2	2		5		1		6	6		
Grasshopper sparrow	<i>Ammodramus savannarum</i>							4	1	1	3	2					5				
Oregon junco*	<i>Junco oreganus</i>	6	6	6	4	5	5		6	6	1	7				1	3			2	
Gray-headed junco*	<i>Junco caniceps</i>													2	3	1					
Mexican junco	<i>Junco phaeonotus</i>				2						3					1					
Chipping sparrow*	<i>Spizella passerina</i>	3	3	3	7	8	8	4	8	8	7	8		9	5	6	10	1	1	2	
Clay-colored sparrow	<i>Spizella pallida</i>	2	2	2				3	1	1	5	1	4				3				
Brewer's sparrow*	<i>Spizella breweri</i>	4	4	4				7	6	6		5		1	1				3	2	
Black-chinned sparrow*	<i>Spizella atrogularis</i>				2						3					1					
Harris' sparrow*	<i>Zonotrichia querula</i>				2											1					
White-crowned sparrow*	<i>Zonotrichia leucophrys</i>	5	5	5	10	6	6	7	9	9	10	8		5	3		2		4	1	
White-throated sparrow*	<i>Zonotrichia albicollis</i>	3	3	3		5	5		4	4		4							1	2	
Fox sparrow*	<i>Passerella iliaca</i>				4						2					3		1			
Field sparrow*	<i>Spizella pusilla</i>	2		2								1	3				4				
Lincoln's sparrow	<i>Melospiza lincolni</i>	3	3	3				4									3	1	2		
Swamp sparrow	<i>Melospiza georgiana</i>																	3	2	1	
Song sparrow	<i>Melospiza melodia</i>																	2	1	3	
McCowan's longspur	<i>Rhynchophanes mccownii</i>							3	2	2	1	2					4				
Chestnut-collared longspur	<i>Calcarius ornatus</i>				4			2	1	1	1	1					3				

REMARKS: Nomenclature in accordance with Burt and Grossenheider (1964) and Findley, Harris, Wilson, and Jones (1975).





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Mxsh Mountain	Mxsh Hill	Mxsh Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Priju Rup	Priju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
opossum	Didelphis marsupialis																3	1	2		
Merriam shrew	Sorex merriami				1						1				2						
vagrant shrew	Sorex vagrans				2						1							2			
gray shrew	Notiosorex crawfordii	3	3	3	2	4	4	4			2					2	1	1	1		
hog-nosed bat	Choeronycteris mexicana																				1
long-nosed bat	Leptonycteris navalis																				1
cave myotis	Myotis velifer																				1
Yuma myotis*	Myotis yumanensis	1	1	1																	
Arizona myotis	Myotis occultus																				1
fringe-tailed myotis	Myotis thysanodes																				1
Keen myotis	Myotis keeni																	1	1		
long-legged myotis	Myotis volans																				1
California myotis	Myotis californicus																	1	1		
long-eared myotis	Myotis evotis																1		1		
small-footed myotis	Myotis subulatus																	1	1		
silver-haired bat	Lasionycteris noctivagans				2						2						3	1	1		
western pipistrel	Pipistrellus hesperus																2	1	1	1	
big brown bat	Eptesicus fuscus																				1
red bat	Lasiurus borealis				2											4	3	1	1		
hoary bat	Lasiurus cinereus				2											4	3	1	1		
western yellow bat	Lasiurus ega				2											4	3	1	1		
spotted bat	Euderma maculatum																				1
western big-eared bat	Plecotus townsendii																				1
Mexican big-eared bat	Plecotus phyllotis				1						2					1		2			
pallid bat*	Antrozous pallidus	1	1	1													2	2	2		
Mexican free-tailed bat*	Tadarida brasiliensis																1	2	2		
pocketed free-tailed bat	Tadarida femorosacca																				1
big free-tailed bat	Tadarida molossa																				1
western mastiff bat	Eumops perotis																				1
eastern cottontail	Sylvilagus floridanus	7	7	7	1	2	2	2	5	5	3	5	7	6	4	1	1	5	5		
desert cottontail*	Sylvilagus auduboni	3	3	3	3	5	5	4	7	7	6	7	8	5	2	3	1	7	3	6	
black-tailed jackrabbit*	Lepus californicus	1	2	2	5	5	5	4	4	4	6	4	7	1	1	5	3	7	6		
Abert's squirrel*	Sciurus aberti																	1			





COMMON NAME	SCIENTIFIC NAME	Latr Rup	Latr Breaks	Latr Hill	Wash Mountain	Wash Hill	Wash Rup	Hash Rup	Grass Rup	Grass Hill	Grass Mountain	Grass Flat	Malpais	Prju Rup	Prju Dunes	Pinyon-Juniper	Pseudoriparian	Riparian Forest	Riparian Woodland	Stock Tank	No Preferred Habitat
cliff chipmunk*	Eutamias dorsalis				2											1					
gray-collared chipmunk	Eutamias cinereicollis				2											1					
Texas antelope squirrel*	Ammospermophilus interpres	1	1	1	2	3	3	4	5							1	1				
thirteen-lined ground squirrel*	Spermophilus tridecemlineatus	2	2	2	5	4	4	1	2	2	3	2									
spotted ground squirrel*	Spermophilus spilosoma	5	5	5		6	6	4	3	3		3		2	1		8	7	7		
rock squirrel*	Spermophilus variegatus	6	6	6	2	2	4	8			3					1	5	7	7		
golden-mantled ground squirrel*	Spermophilus lateralis				1						2					1					
Mexican ground squirrel	Spermophilus mexicanus	3	3	3		4	4	5				6		2	1	2					
black-tailed prairie dog	Cynomys ludovicianus							3	1	2	2	1									
white-tailed prairie dog	Cynomys gunnisoni							3	2	1	1	2									
valley pocket gopher	Thomomys bottae				2					3	1										
Bailey pocket gopher	Thomomys baileyi	1	2	1		3	3	4													
plains pocket gopher	Geomys bursarius				5	4	4	3	1	1	2	1									
Mexican pocket gopher	Pappogeomys castanops					5	5	3						2	1		4				
silky pocket mouse*	Perognathus flavus	3	5	3				4	2	2		1									
hispid pocket mouse*	Perognathus hispidus						4	4	1	2	3	2									
rock pocket mouse*	Perognathus intermedius	1	1	2				7	5	6	7	6	4			3	6				
desert pocket mouse	Perognathus penicillatus	4	4	4		6	6	6	5	5		5					2	3	1		
Apache pocket mouse	Perognathus apache				2	4					3					1					
Merriam's pocket mouse	Perognathus merriami				5	4	4	3	1	1	2	1		4							
Ord's kangaroo rat*	Dipodomys ordii	4	6	4				2	5	5	6	5		3	1		7				
Merriam's kangaroo rat*	Dipodomys merriami	1	2	1	7	5	5	4	6	6	7	6	8	5	3		5				
hammer-tailed kangaroo rat*	Dipodomys spectabilis				3			2	1	1	1	1				5	4				
plains harvest mouse*	Reithrodontomys montanus					5	5	4	2	2	3	1	6								
western harvest mouse*	Reithrodontomys megalotis	4	6	4	6	6	6	4	2	2	3	1				5					
cactus mouse*	Peromyscus eremicus	3	4	1	5	4	2	2	3	3	4	3	3	6	7	8					
deer mouse*	Peromyscus maniculatus	2	2	2	7	7	7	3	1	1	11	1	7	6	4	5	8		10	9	
white-footed mouse*	Peromyscus leucopus	4	4	4				3	1	1	3	1				2	5		4		
brush mouse*	Peromyscus boylii				4						3					1	2	2	2		
pluyen mouse*	Peromyscus truei								4	3	2	4				1					
rock mouse*	Peromyscus difficilis	3	3	3					2	2		2	2	1							
northern grasshopper mouse*	Onychomys leucogaster	3	3	3			4	2	2	2		2		5	1		4				
southern grasshopper mouse*	Onychomys torridus	1	1	1			4	2	3	3		3					4				





[illegible]

SPECIES														LOCALITY	
NO.	NAME	DATE	TIME	PLACE	NO.	NAME	DATE	TIME	PLACE	NO.	NAME	DATE	TIME	LOCALITY	LOCALITY
1	...	...	...	...	2	...	...	...	...	3	...	...	...	...	...
4	...	...	...	...	5	...	...	...	...	6	...	...	...	...	...
7	...	...	...	...	8	...	...	...	...	9	...	...	...	...	...
10	...	...	...	...	11	...	...	...	...	12	...	...	...	...	...
13	...	...	...	...	14	...	...	...	...	15	...	...	...	...	...
16	...	...	...	...	17	...	...	...	...	18	...	...	...	...	...
19	...	...	...	...	20	...	...	...	...	21	...	...	...	...	...
22	...	...	...	...	23	...	...	...	...	24	...	...	...	...	...
25	...	...	...	...	26	...	...	...	...	27	...	...	...	...	...
28	...	...	...	...	29	...	...	...	...	30	...	...	...	...	...
31	...	...	...	...	32	...	...	...	...	33	...	...	...	...	...
34	...	...	...	...	35	...	...	...	...	36	...	...	...	...	...
37	...	...	...	...	38	...	...	...	...	39	...	...	...	...	...
40	...	...	...	...	41	...	...	...	...	42	...	...	...	...	...
43	...	...	...	...	44	...	...	...	...	45	...	...	...	...	...
46	...	...	...	...	47	...	...	...	...	48	...	...	...	...	...
49	...	...	...	...	50	...	...	...	...	51	...	...	...	...	...
52	...	...	...	...	53	...	...	...	...	54	...	...	...	...	...
55	...	...	...	...	56	...	...	...	...	57	...	...	...	...	...
58	...	...	...	...	59	...	...	...	...	60	...	...	...	...	...
61	...	...	...	...	62	...	...	...	...	63	...	...	...	...	...
64	...	...	...	...	65	...	...	...	...	66	...	...	...	...	...
67	...	...	...	...	68	...	...	...	...	69	...	...	...	...	...
70	...	...	...	...	71	...	...	...	...	72	...	...	...	...	...
73	...	...	...	...	74	...	...	...	...	75	...	...	...	...	...
76	...	...	...	...	77	...	...	...	...	78	...	...	...	...	...
79	...	...	...	...	80	...	...	...	...	81	...	...	...	...	...
82	...	...	...	...	83	...	...	...	...	84	...	...	...	...	...
85	...	...	...	...	86	...	...	...	...	87	...	...	...	...	...
88	...	...	...	...	89	...	...	...	...	90	...	...	...	...	...
91	...	...	...	...	92	...	...	...	...	93	...	...	...	...	...
94	...	...	...	...	95	...	...	...	...	96	...	...	...	...	...
97	...	...	...	...	98	...	...	...	...	99	...	...	...	...	...
100	...	...	...	...	101	...	...	...	...	102	...	...	...	...	...



## LEGEND

### General Survey Sites

1. Green Hill	=	Green Hill
2. Green Hill	=	Green Mountain
3. Green Hill	=	Green Hilling Island
4. Green Hill	=	Green Hill
5. Green Hill	=	Green Hilling Island
6. Green Hill	=	Green Hilling Island
7. Green Hill	=	Green Hilling Island
8. Green Hill	=	Green Hilling Island
9. Green Hill	=	Green Hilling Island
10. Green Hill	=	Green Hilling Island
11. Green Hill	=	Green Hilling Island
12. Green Hill	=	Green Hilling Island
13. Green Hill	=	Green Hilling Island
14. Green Hill	=	Green Hilling Island
15. Green Hill	=	Green Hilling Island
16. Green Hill	=	Green Hilling Island
17. Green Hill	=	Green Hilling Island
18. Green Hill	=	Green Hilling Island
19. Green Hill	=	Green Hilling Island
20. Green Hill	=	Green Hilling Island

### General Survey Sites in the Green Hill

- 1. General Survey Sites in the Green Hill
- 2. General Survey Sites in the Green Hill
- 3. General Survey Sites in the Green Hill

### General Survey Sites

- 1. General Survey Sites in the Green Hill
- 2. General Survey Sites in the Green Hill
- 3. General Survey Sites in the Green Hill
- 4. General Survey Sites in the Green Hill
- 5. General Survey Sites in the Green Hill
- 6. General Survey Sites in the Green Hill
- 7. General Survey Sites in the Green Hill
- 8. General Survey Sites in the Green Hill
- 9. General Survey Sites in the Green Hill
- 10. General Survey Sites in the Green Hill
- 11. General Survey Sites in the Green Hill
- 12. General Survey Sites in the Green Hill
- 13. General Survey Sites in the Green Hill
- 14. General Survey Sites in the Green Hill
- 15. General Survey Sites in the Green Hill
- 16. General Survey Sites in the Green Hill
- 17. General Survey Sites in the Green Hill
- 18. General Survey Sites in the Green Hill
- 19. General Survey Sites in the Green Hill
- 20. General Survey Sites in the Green Hill





## LEGEND

### Standard Habitat Sites

1. Grass Hill	-	Grass Hill
2. Grass Mtn	-	Grass Mountain
3. Grass Rup	-	Grass Rolling Upland
4. Grass Flat	-	Grass Flat
5. Latr Rup	-	Larrea tridentata Rolling Upland
6. Latr Breaks	-	Larrea tridentata Breaks
7. Latr Hill	-	Larrea tridentata Hill
8. Mxsh Mtn	-	Mixed Shrub Mountain
9. Mxsh Hill	-	Mixed Shrub Hill
10. Mxsh Rup	-	Mixed Shrub Rolling Upland
11. Hash Rup	-	Half Shrub Rolling Upland
12. Malpais	-	Malpais
13. Prju Rup	-	Prosopis juliflora Rolling Upland
14. Prju Dunes	-	Prosopis juliflora Dunes
15. P-J	-	Pinyon-Juniper
16. Pseudo	-	Pseudoriparian
17. Rip Forest	-	Riparian Forest
18. Rip Woodld	-	Riparian Woodland
19. Stock Tank	-	Stock Tank

### Factors Utilized In Determining Key Species

- 1 - Limited tolerance to environmental change
- 2 - Limited distribution dependent on environmental factors
- 3 - Declining population dependent on environmental factors

### Population Indices

- I - Increase in population
- D - Decrease in population
- S - Stable population
- N - Species no longer present

\* Designates that a SHS could be converted to a grassland aspect through mechanical manipulation or possibly through discretionary use of fire as a management tool.

# Legend

## Standard Habitat Sites

1. Green Hill	-	Green Hill
2. Green Hill	-	Green Hill
3. Green Hill	-	Green Hill
4. Green Hill	-	Green Hill
5. Green Hill	-	Green Hill
6. Green Hill	-	Green Hill
7. Green Hill	-	Green Hill
8. Green Hill	-	Green Hill
9. Green Hill	-	Green Hill
10. Green Hill	-	Green Hill
11. Green Hill	-	Green Hill
12. Green Hill	-	Green Hill
13. Green Hill	-	Green Hill
14. Green Hill	-	Green Hill
15. Green Hill	-	Green Hill
16. Green Hill	-	Green Hill
17. Green Hill	-	Green Hill
18. Green Hill	-	Green Hill
19. Green Hill	-	Green Hill
20. Green Hill	-	Green Hill
21. Green Hill	-	Green Hill
22. Green Hill	-	Green Hill
23. Green Hill	-	Green Hill
24. Green Hill	-	Green Hill
25. Green Hill	-	Green Hill
26. Green Hill	-	Green Hill
27. Green Hill	-	Green Hill
28. Green Hill	-	Green Hill
29. Green Hill	-	Green Hill
30. Green Hill	-	Green Hill

## Factors Which is Dependent on Factors

1. Limited tolerance to environmental change	-
2. Limited distribution dependent on environmental factors	-
3. Limited population dependent on environmental factors	-

## Population Factors

1. Increase in population	-	Population that a site could be considered to a general aspect through mechanical movement or possibly through disturbance and if this is a management goal.
2. Increase in population	-	
3. Stable population	-	
4. Increase in population	-	



BLM, LAS CRUCES DISTRICT POTENTIAL STANDARD HABITATS UNDER VARYING DEGREES OF UTILIZATION  
AND TIME, AND THE RELATED POPULATION IMPACTS UPON KEY WILDLIFE SPECIES

POTENTIAL STANDARD HABITAT SITES UNDER VARYING DEGREES OF UTILIZATION AND TIME												
		10% Utilization			40% Utilization			70% Utilization				
		Time Frame In Years			Time Frame In Years			Time Frame In Years				
		25	50	100	25	50	100	25	50	100		
Current SHS: Grass Hill		Grass Hill	x	x	x	Grass Hill	x	x	x	Mxsh Hill	x	x
										Latr Hill	x	x
										P-J	x	x
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	plains black-headed snake <sup>2</sup>	I	S	S	I	I	S	S	D	D	D	S
	smooth green snake <sup>1,2</sup>	I	S	S	I	I	S	S	D	D	D	S
	h ringed lark <sup>1,2</sup>	I	S	S	I	I	S	S	D	D	D	S
	short-eared owl <sup>2</sup>	I	S	S	I	I	S	S	D	D	D	S
	plains harvest mouse <sup>2</sup>	I	S	S	I	I	S	S	D	D	D	S
	brush mouse <sup>1,2</sup>	D	S	S	S	S	S	S	I	D	I	S
	pronghorn antelope <sup>1,2</sup>	I	S	S	I	I	S	S	D	D	D	S
Current SHS: Grass Mtn		Grass Mtn	x	x	x	Grass Mtn	x	x	x	Mxsh Mtn	x	x
										P-J	x	x
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	Texas blind snake <sup>2</sup>	I	S	S	I	I	S	S	S	D	D	S
	smooth green snake <sup>1,2</sup>	I	S	S	I	I	S	S	D	D	D	S
	rufous-crowned sparrow <sup>1,2</sup>	D	S	S	S	S	S	S	I	I	S	S
	McCown's longspur <sup>1,2,3</sup>	I	S	S	I	I	S	S	D	D	D	S
	rock squirrel <sup>2</sup>	I	S	S	I	I	S	S	D	D	D	S
	mule deer <sup>1</sup>	D	S	S	S	S	S	S	I	I	S	S
	pronghorn antelope <sup>1,2</sup>	I	S	S	I	I	S	S	D	D	D	S
Current SHS: Grass Rup		Grass Rup	x	x	x	Grass Rup	x	x	x	Hash Rup	x	x
										Prju Rup	x	x
										Mxsh Rup	x	x
										Prju Dunes	x	x
										Latr Rup	x	x
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	western box turtle <sup>2,3</sup>	I	S	S	I	I	S	S	D	S	S	D
	plains spadefoot <sup>1,2</sup>	I	S	S	I	I	S	S	D	S	S	D
	burrowing owl <sup>2</sup>	I	S	S	I	I	S	S	D	S	S	D
	feruginous hawk <sup>1,2,3</sup>	I	S	S	I	I	S	S	D	S	S	D
	hispid pocket mouse <sup>2</sup>	I	S	S	I	I	S	S	D	S	S	D
	plains harvest mouse <sup>2</sup>	I	S	S	I	I	S	S	D	S	S	D
	pronghorn antelope <sup>1,2</sup>	I	S	S	I	I	S	S	D	S	S	D

TABLE 1. Data on the growth of the young of the common carp (*Cyprinus carpio*) in the pond and in the river. The data were obtained from the pond and river in the year 1960.

Date of capture	Pond				River				Date of capture
	Weight, g	Length, cm	Number of scales	Number of scales on the head	Weight, g	Length, cm	Number of scales	Number of scales on the head	
1960. 05. 10	10.0	3.5	10	10	10.0	3.5	10	10	1960. 05. 10
1960. 05. 20	15.0	4.0	15	15	15.0	4.0	15	15	1960. 05. 20
1960. 06. 01	20.0	4.5	20	20	20.0	4.5	20	20	1960. 06. 01
1960. 06. 10	25.0	5.0	25	25	25.0	5.0	25	25	1960. 06. 10
1960. 06. 20	30.0	5.5	30	30	30.0	5.5	30	30	1960. 06. 20
1960. 07. 01	35.0	6.0	35	35	35.0	6.0	35	35	1960. 07. 01
1960. 07. 10	40.0	6.5	40	40	40.0	6.5	40	40	1960. 07. 10
1960. 07. 20	45.0	7.0	45	45	45.0	7.0	45	45	1960. 07. 20
1960. 08. 01	50.0	7.5	50	50	50.0	7.5	50	50	1960. 08. 01
1960. 08. 10	55.0	8.0	55	55	55.0	8.0	55	55	1960. 08. 10
1960. 08. 20	60.0	8.5	60	60	60.0	8.5	60	60	1960. 08. 20
1960. 09. 01	65.0	9.0	65	65	65.0	9.0	65	65	1960. 09. 01
1960. 09. 10	70.0	9.5	70	70	70.0	9.5	70	70	1960. 09. 10
1960. 09. 20	75.0	10.0	75	75	75.0	10.0	75	75	1960. 09. 20
1960. 10. 01	80.0	10.5	80	80	80.0	10.5	80	80	1960. 10. 01
1960. 10. 10	85.0	11.0	85	85	85.0	11.0	85	85	1960. 10. 10
1960. 10. 20	90.0	11.5	90	90	90.0	11.5	90	90	1960. 10. 20
1960. 11. 01	95.0	12.0	95	95	95.0	12.0	95	95	1960. 11. 01
1960. 11. 10	100.0	12.5	100	100	100.0	12.5	100	100	1960. 11. 10
1960. 11. 20	105.0	13.0	105	105	105.0	13.0	105	105	1960. 11. 20
1960. 12. 01	110.0	13.5	110	110	110.0	13.5	110	110	1960. 12. 01
1960. 12. 10	115.0	14.0	115	115	115.0	14.0	115	115	1960. 12. 10
1960. 12. 20	120.0	14.5	120	120	120.0	14.5	120	120	1960. 12. 20
1961. 01. 01	125.0	15.0	125	125	125.0	15.0	125	125	1961. 01. 01
1961. 01. 10	130.0	15.5	130	130	130.0	15.5	130	130	1961. 01. 10
1961. 01. 20	135.0	16.0	135	135	135.0	16.0	135	135	1961. 01. 20
1961. 02. 01	140.0	16.5	140	140	140.0	16.5	140	140	1961. 02. 01
1961. 02. 10	145.0	17.0	145	145	145.0	17.0	145	145	1961. 02. 10
1961. 02. 20	150.0	17.5	150	150	150.0	17.5	150	150	1961. 02. 20
1961. 03. 01	155.0	18.0	155	155	155.0	18.0	155	155	1961. 03. 01
1961. 03. 10	160.0	18.5	160	160	160.0	18.5	160	160	1961. 03. 10
1961. 03. 20	165.0	19.0	165	165	165.0	19.0	165	165	1961. 03. 20
1961. 04. 01	170.0	19.5	170	170	170.0	19.5	170	170	1961. 04. 01
1961. 04. 10	175.0	20.0	175	175	175.0	20.0	175	175	1961. 04. 10
1961. 04. 20	180.0	20.5	180	180	180.0	20.5	180	180	1961. 04. 20
1961. 05. 01	185.0	21.0	185	185	185.0	21.0	185	185	1961. 05. 01
1961. 05. 10	190.0	21.5	190	190	190.0	21.5	190	190	1961. 05. 10
1961. 05. 20	195.0	22.0	195	195	195.0	22.0	195	195	1961. 05. 20
1961. 06. 01	200.0	22.5	200	200	200.0	22.5	200	200	1961. 06. 01
1961. 06. 10	205.0	23.0	205	205	205.0	23.0	205	205	1961. 06. 10
1961. 06. 20	210.0	23.5	210	210	210.0	23.5	210	210	1961. 06. 20
1961. 07. 01	215.0	24.0	215	215	215.0	24.0	215	215	1961. 07. 01
1961. 07. 10	220.0	24.5	220	220	220.0	24.5	220	220	1961. 07. 10
1961. 07. 20	225.0	25.0	225	225	225.0	25.0	225	225	1961. 07. 20
1961. 08. 01	230.0	25.5	230	230	230.0	25.5	230	230	1961. 08. 01
1961. 08. 10	235.0	26.0	235	235	235.0	26.0	235	235	1961. 08. 10
1961. 08. 20	240.0	26.5	240	240	240.0	26.5	240	240	1961. 08. 20
1961. 09. 01	245.0	27.0	245	245	245.0	27.0	245	245	1961. 09. 01
1961. 09. 10	250.0	27.5	250	250	250.0	27.5	250	250	1961. 09. 10
1961. 09. 20	255.0	28.0	255	255	255.0	28.0	255	255	1961. 09. 20
1961. 10. 01	260.0	28.5	260	260	260.0	28.5	260	260	1961. 10. 01
1961. 10. 10	265.0	29.0	265	265	265.0	29.0	265	265	1961. 10. 10
1961. 10. 20	270.0	29.5	270	270	270.0	29.5	270	270	1961. 10. 20
1961. 11. 01	275.0	30.0	275	275	275.0	30.0	275	275	1961. 11. 01
1961. 11. 10	280.0	30.5	280	280	280.0	30.5	280	280	1961. 11. 10
1961. 11. 20	285.0	31.0	285	285	285.0	31.0	285	285	1961. 11. 20
1961. 12. 01	290.0	31.5	290	290	290.0	31.5	290	290	1961. 12. 01
1961. 12. 10	295.0	32.0	295	295	295.0	32.0	295	295	1961. 12. 10
1961. 12. 20	300.0	32.5	300	300	300.0	32.5	300	300	1961. 12. 20
1962. 01. 01	305.0	33.0	305	305	305.0	33.0	305	305	1962. 01. 01
1962. 01. 10	310.0	33.5	310	310	310.0	33.5	310	310	1962. 01. 10
1962. 01. 20	315.0	34.0	315	315	315.0	34.0	315	315	1962. 01. 20
1962. 02. 01	320.0	34.5	320	320	320.0	34.5	320	320	1962. 02. 01
1962. 02. 10	325.0	35.0	325	325	325.0	35.0	325	325	1962. 02. 10
1962. 02. 20	330.0	35.5	330	330	330.0	35.5	330	330	1962. 02. 20
1962. 03. 01	335.0	36.0	335	335	335.0	36.0	335	335	1962. 03. 01
1962. 03. 10	340.0	36.5	340	340	340.0	36.5	340	340	1962. 03. 10
1962. 03. 20	345.0	37.0	345	345	345.0	37.0	345	345	1962. 03. 20
1962. 04. 01	350.0	37.5	350	350	350.0	37.5	350	350	1962. 04. 01
1962. 04. 10	355.0	38.0	355	355	355.0	38.0	355	355	1962. 04. 10
1962. 04. 20	360.0	38.5	360	360	360.0	38.5	360	360	1962. 04. 20
1962. 05. 01	365.0	39.0	365	365	365.0	39.0	365	365	1962. 05. 01
1962. 05. 10	370.0	39.5	370	370	370.0	39.5	370	370	1962. 05. 10
1962. 05. 20	375.0	40.0	375	375	375.0	40.0	375	375	1962. 05. 20
1962. 06. 01	380.0	40.5	380	380	380.0	40.5	380	380	1962. 06. 01
1962. 06. 10	385.0	41.0	385	385	385.0	41.0	385	385	1962. 06. 10
1962. 06. 20	390.0	41.5	390	390	390.0	41.5	390	390	1962. 06. 20
1962. 07. 01	395.0	42.0	395	395	395.0	42.0	395	395	1962. 07. 01
1962. 07. 10	400.0	42.5	400	400	400.0	42.5	400	400	1962. 07. 10
1962. 07. 20	405.0	43.0	405	405	405.0	43.0	405	405	1962. 07. 20
1962. 08. 01	410.0	43.5	410	410	410.0	43.5	410	410	1962. 08. 01
1962. 08. 10	415.0	44.0	415	415	415.0	44.0	415	415	1962. 08. 10
1962. 08. 20	420.0	44.5	420	420	420.0	44.5	420	420	1962. 08. 20
1962. 09. 01	425.0	45.0	425	425	425.0	45.0	425	425	1962. 09. 01
1962. 09. 10	430.0	45.5	430	430	430.0	45.5	430	430	1962. 09. 10
1962. 09. 20	435.0	46.0	435	435	435.0	46.0	435	435	1962. 09. 20
1962. 10. 01	440.0	46.5	440	440	440.0	46.5	440	440	1962. 10. 01
1962. 10. 10	445.0	47.0	445	445	445.0	47.0	445	445	1962. 10. 10
1962. 10. 20	450.0	47.5	450	450	450.0	47.5	450	450	1962. 10. 20
1962. 11. 01	455.0	48.0	455	455	455.0	48.0	455	455	1962. 11. 01
1962. 11. 10	460.0	48.5	460	460	460.0	48.5	460	460	1962. 11. 10
1962. 11. 20	465.0	49.0	465	465	465.0	49.0	465	465	1962. 11. 20
1962. 12. 01	470.0	49.5	470	470	470.0	49.5	470	470	1962. 12. 01
1962. 12. 10	475.0	50.0	475	475	475.0	50.0	475	475	1962. 12. 10
1962. 12. 20	480.0	50.5	480	480	480.0	50.5	480	480	1962. 12. 20
1963. 01. 01	485.0	51.0	485	485	485.0	51.0	485	485	1963. 01. 01
1963. 01. 10	490.0	51.5	490	490	490.0	51.5	490	490	1963. 01. 10
1963. 01. 20	495.0	52.0	495	495	495.0	52.0	495	495	1963. 01. 20
1963. 02. 01	500.0	52.5	500	500	500.0	52.5	500	500	1963. 02. 01
1963. 02. 10	505.0	53.0	505	505	505.0	53.0	505	505	1963. 02. 10
1963. 02. 20	510.0	53.5	510	510	510.0	53.5	510	510	1963. 02. 20
1963. 03. 01	515.0	54.0	515	515	515.0	54.0	515	515	1963. 03. 01
1963. 03. 10	520.0	54.5	520	520	520.0	54.5	520	520	1963. 03. 10
1963. 03. 20	525.0	55.0	525	525	525.0	55.0	525	525	1963. 03. 20
1963. 04. 01	530.0	55.5	530	530	530.0	55.5	530	530	1963. 04. 01
1963. 04. 10	535.0	56.0	535	535	535.0	56.0	535	535	1963. 04. 10
1963. 04. 20	540.0	56.5	540	540	540.0	56.5	540	540	1963. 04. 20
1963. 05. 01	545.0	57.0	545	545	545.0	57.0	545	545	1963. 05. 01
1963. 05. 10	550.0	57.5	550	550	550.0	57.5	550	550	1963. 05. 10
1963. 05. 20	555.0	58.0	555	555	555.0	58.0	555	555	1963. 05. 20
1963. 06. 01	560.0	58.5	560	560	560.0	58.5	560	56	



Current SHS: Grass Flat		Grass Flat	x	x	x	Grass Flat	x	x	x	Grass Flat	x	x	x	Grass Flat	x	x	x
Associated Key Species and The Population Impacts	plains spadefoot 1,2		I	S	S		I	I	S		I	I	S		I	I	S
Under Varying Degrees of Utilization and Time	Texas horned lizard 2		D	S	S		I	S	S		I	S	S		I	S	S
	western meadowlark 1,2		I	S	S		I	I	S		I	I	S		I	I	S
	horned lark 1,2		I	S	S		I	I	S		I	I	S		I	I	S
	least cotton rat 1,2,3		I	S	S		I	I	S		I	I	S		I	I	S
	western harvest mouse 1,3		I	S	S		I	I	S		I	I	S		I	I	S
	pronghorn antelope 1,2		I	S	S		I	I	S		I	I	S		I	I	S
Current SHS: Latr Rup		Latr Rup	x	x	x	Latr Rup	x	x	x	Latr Rup	x	x	x	Latr Rup	x	x	x
Associated Key Species and The Population Impacts	round-tailed horned lizard 1,2		I D	S D	S S		I	I	S		I	I	S		I	I	S
Under Varying Degrees of Utilization and Time	Couch's spadefoot toad 2		I D	S D	S S		I	I	S		I	I	S		I	I	S
	scaled quail 1		S I	S S	D S		I	I	S		I	I	S		I	I	S
	black-throated sparrow 1,2		D D	D D	S S		S	S	D		S	S	D		S	S	D
	southern grasshopper mouse 2		I I	S S	S S		I	I	S		I	I	S		I	I	S
	Merriam's kangaroo rat 2		D D	S D	S S		S	S	S		S	S	S		S	S	S
	mule deer 1		I I	S S	S S		I	I	S		I	I	S		I	I	S
Current SHS: Latr Breaks		Latr Breaks	x	x	x	Latr Breaks	x	x	x	Latr Breaks	x	x	x	Latr Breaks	x	x	x
Associated Key Species and The Population Impacts	green toad 2		I	S	S		S	S	S		S	S	S		S	S	S
Under Varying Degrees of Utilization and Time	checkered whiptail 2,3		I	S	S		I	I	S		I	I	S		I	I	S
	verdin 1,2		D	D	S		S	S	S		S	S	S		S	S	S
	black-tailed gnatcatcher 1,2		D	D	S		S	S	S		S	S	S		S	S	S
	Merriam's kangaroo rat 2		D	S	S		S	S	S		S	S	S		S	S	S
	spotted skunk 2		I	S	S		I	I	S		I	I	S		I	I	S
	mule deer 1		I	S	S		I	I	S		I	I	S		I	I	S
Current SHS: Latr Hill		Latr Hill	x	x	x	Latr Hill	x	x	x	Latr Hill	x	x	x	Latr Hill	x	x	x
Associated Key Species and The Population Impacts	checkered whiptail 2		S S	D D	D N		S S	S D	S D		S S	S D	S D		S S	S D	S D
Under Varying Degrees of Utilization and Time	trans-pecos rat snake 2,3		S D	D D	D N		S S	S D	S D		S S	S D	S D		S S	S D	S D
	green-tailed towhee 2		D D	D D	S N		S D	S D	S S		S D	S D	S S		S D	S D	S S
	black-throated sparrow 1,2		D D	D D	S S		S S	S D	D D		S S	S D	D D		S S	S D	D D
	cactus mouse 2		D D	D D	S S		S D	S S	S S		S D	S S	S S		S D	S S	S S
	rock pocket mouse 2		D D	D D	S S		S D	S S	S S		S D	S S	S S		S D	S S	S S
	mule deer 1		I I	S S	S S		I I	I I	S S		I I	I I	S S		I I	I I	S S





Current SHS: Mxsh Mtn		Mxsh Mtn Grass Mtn*	x	x	x	Mxsh Mtn Grass Mtn*	x	x	x	Mxsh Mtn P-J	x	x	x
Associated Key Species and The Population Impacts: Under Varying Degrees of Utilization and Time	rock rattlesnake 2,3		D D	D D	S N		S D	S S	S S		I I	S S	S S
	short-horned lizard 1,2		I I	S S	S S		I I	S S	S S		D D	S S	S S
	sage thrasher 2		D D	D D	S S		S D	D D	D S		I I	S S	S S
	common bushy 1,2		D D	D D	S S		S D	D D	D S		I I	S S	S S
	white-throated woodrat 2		D D	S S	S S		S D	S D	S S		I I	S S	S S
	golden-mantled ground squirrel 2		I D	S S	S S		I D	I D	S S		D D	S S	S S
	mule deer 1		I I	S S	S S		I S	I S	S S		D D	D D	S S
Current SHS: Mxsh Hill		Mxsh Hill Grass Hill* Latr Hill	x	x	x	Mxsh Hill Grass Hill* Latr Hill	x	x	x	Mxsh Hill Latr Hill	x	x	x
Associated Key Species and The Population Impacts: Under Varying Degrees of Utilization and Time	western black-headed snake 2		I D D	S D S	S S S		I D D	I S D	S S S		D D	D D	S D
	great plains toad 1,2		I D S	S D S	S S S		I D D	I S S	S S S		D D	S D	S D
	rufous-sided towhee 1,2		D D D	S D D	S D S		S D D	D S S	D S S		I S	S S	S S
	cactus wren 1,2		D D D	S D D	S D S		S D D	D S S	D S S		I S	S S	S S
	rock squirrel 2		I D D	S S D	S S S		I D D	I D D	S S S		D D	S D	S S
	white-throated woodrat 2		D D D	S S D	S S S		S D D	S D D	S S S		I S	S S	S S
	mule deer 1		I I I	S S S	S S S		I S I	I S I	S S S		D D	D D	S S
Current SHS: Mxsh Rup		Mxsh Rup Grass Rup* Latr Rup	x	x	x	Mxsh Rup Grass Rup* Latr Rup	x	x	x	Mxsh Rup Latr Rup	x	x	x
Associated Key Species and The Population Impacts: Under Varying Degrees of Utilization and Time	western black-headed snake 2		I D D	S D S	S S S		I D D	I S D	S S S		D D	D D	S D
	great plains toad 1,2		I D D	S D D	S S S		I D D	I S D	S S S		D D	S D	S S
	Scott's oriole 1,2		I I D	S S D	S S S		I I S	I I D	S S D		D D	S D	S S
	aplomado falcon 1,2,3		I I D	S S D	S S S		I I D	I I D	S S S		D D	D N	N N
	cactus mouse 2		D D I	S S S	S S S		S S I	S S I	S S S		I D	S S	S S
	porcupine 2		D D D	D D D	S N S		S S S	S S S	S S S		I I	S S	S S
	mule deer 1		I I I	S S S	S S S		I S I	I S I	S S S		D D	D D	S S
Current SHS: Hash Rup		Hash Rup Prju Rup Latr Rup	x	x	x	Hash Rup Prju Rup Latr Rup	x	x	x	Hash Rup Prju Rup Prju Dunes Latr Rup	x	x	x
Associated Key Species and The Population Impacts: Under Varying Degrees of Utilization and Time	western whiptail 2		I S D	S S S	S S S		I S D	I S D	S S S		S S D	D D D	D S
	massasauga 2		I D D	S S D	S S N		I D D	I D D	S S N		D D D	D D N	N N
	lark hunting 2		D D D	D D S	S S S		D D S	S S S	S S S		I I I	S S S	S S
	Cassin's sparrow 1,2		I I I	S S S	S S S		I I I	I I I	S S S		D D D	D D D	S S
	thirteen-lined ground squirrel 1,2		I I I	S S S	S S S		I I I	I I I	S S S		D D D	D D D	N N
	northern grasshopper mouse 2		S S S	D D D	D D D		S S S	S S S	S S S		I I I	I I I	S S
	mule deer 1		I I I	S S S	S S S		I I I	I I I	S S S		D D D	D D D	S S





Current SHS: Malpais		Malpais	x	x	x	Malpais	x	x	x	Malpais	x	x	x
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	crevice spiny lizard <sup>1,2</sup>		D	D	S		S	S	S		I	S	S
	collared lizard <sup>1,2</sup>		D	S	S		S	S	S		I	S	S
	hotter's sparrow		I	S	S		I	I	S		D	D	S
	rock wren <sup>1,2</sup>		D	D	S		D	S	S		I	I	S
	rock pocket mouse <sup>2</sup>		D	D	S		S	S	S		I	S	S
	cactus mouse <sup>2</sup>		D	D	S		S	S	S		I	S	S
	pronghorn antelope <sup>1,2</sup>		I	S	S		I	I	S		D	D	S
Current SHS: Prju Rup		Prju Rup	x	x	x	Prju Rup	x	x	x	Prju Rup	x		
		Latr Rup	x	x	x	Latr Rup	x	x	x	Latr Rup	x	x	x
		Grass Rup*	x	x	x					Prju Dunes		x	x
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	checkered whiptail <sup>2</sup>		S S D	D D D	D D N		S S	S S	S S		I I	S S	S S
	coach whip <sup>2</sup>		I I I	S S S	S S S		I I	I I	S S		S S	D D	D D
	lark sparrow <sup>2</sup>		I D I	S D S	S S S		I D	I D	S S		D D	D D	N N
	Swainson's hawk <sup>1</sup>		I D D	S D D	S S S		I D	I D	S S		D D	D D	S S
	black-tailed jackrabbit <sup>1</sup>		I I I	S S S	S S S		I I	I I	S S		D D	S S	S S
	Ord's kangaroo rat <sup>1,2</sup>		S S D	D D D	D D S		S S	S S	S S		I I	I I	S S
	pronghorn antelope <sup>1,2</sup>		I I I	S S S	S S S		I I	I I	S S		D D	D D	N N
Current SHS: Prju Dunes		Prju Dunes	x	x	x	Prju Dunes	x	x	x	Prju Dunes	x	x	x
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	lesser earless lizard <sup>1,2</sup>		I	S	S		I	I	S		S	D	D
	side-blotched lizard <sup>1,2</sup>		I	S	S		I	I	S		S	S	D
	ladder-backed woodpecker <sup>1,2</sup>		D	D	S		S	S	S		I	S	S
	curve-billed thrasher <sup>2</sup>		D	D	S		S	S	S		I	S	S
	spotted ground squirrel <sup>2</sup>		I	S	S		I	I	S		D	D	S
	Ord's kangaroo rat <sup>1,2</sup>		S	D	D		S	S	S		I	I	S
	mule deer <sup>1</sup>		I	S	S		I	I	S		D	S	S
Current SHS: P-J		P-J	x	x	x	P-J	x	x	x	P-J	x	x	x
		Grass Mtn*	x	x	x	Grass Mtn*	x	x	x				
Associated Key Species and The Population Impacts Under Varying Degrees of Utilization and Time	plateau whiptail <sup>2</sup>		D D	S D	S S		S D	S D	S S		I	S	S
	sagebrush lizard <sup>2</sup>		S D	D D	D S		S D	S S	S S		I	I	S
	pinon jay <sup>1,2,3</sup>		S D	D D	D S		S D	S S	S S		I	I	S
	gray vireo <sup>1,2</sup>		D D	D D	S S		S D	S D	S S		I	S	S
	cliff chipmunk <sup>1,2</sup>		S D	D D	D S		S D	S S	S S		I	I	S
	pinon mouse <sup>1,2</sup>		S D	D D	D S		S D	S S	S S		I	I	S
	mule deer <sup>1</sup>		I I	S S	S S		S D	S S	S S		D	S	S





[illegible]





## LEGEND

### Standard Habitat Sites

1. Grass Hill	-	Grass Hill
2. Grass Mtn	-	Grass Mountain
3. Grass Rup	-	Grass Rolling Upland
4. Grass Flat	-	Grass Flat
5. Latr Rup	-	Larrea tridentata Rolling Upland
6. Latr Breaks	-	Larrea tridentata Breaks
7. Latr Hill	-	Larrea tridentata Hill
8. Mash Mtn	-	Mixed Shrub Mountain
9. Mash Hill	-	Mixed Shrub Hill
10. Mash Rup	-	Mixed Shrub Rolling Upland
11. Mash Rup	-	Half Shrub Rolling Upland
12. Malpais	-	Malpais
13. Prju Rup	-	Prosopis juliflora Rolling Upland
14. Prju Dunes	-	Prosopis juliflora Dunes
15. P-J	-	Pinyon-Juniper
16. Pseudo	-	Pseudoriparian
17. Rip Forest	-	Riparian Forest
18. Rip Woodld	-	Riparian Woodland
19. Stock Tank	-	Stock Tank

### Factors Utilized In Determining Key Species

- 1 - Limited tolerance to environmental change
- 2 - Limited distribution dependent upon environmental factors
- 3 - Declining population dependent upon environmental factors

### Population Indices

- I - Increase in population
- D - Decrease in population
- S - Stable population
- N - Species no longer present

\* Designates that a SHS could be converted to a grassland aspect through mechanical manipulation or possible through discretionary use of fire as a management tool.





BIBLIOGRAPHY FOR THE YEAR 1964  
DISTRICT STANDARD BASTARD STUDY





# BIBLIOGRAPHY

Allen, J. 1978. Blarney Conservationist. Soil Conservation Service. Las Cruces District. Personal Communication.

Arnold, J. V., D. A. Johnson, and E. W. Bell. 1984. The Pinon-Juniper Type of Aridland: Effects of Grazing, Fire, and Tree Control. USDA, Forest Service, Final Rep. Rpt. No. 84. 1984.

Baker, Vernon. 1931. Mammals of New Mexico. North Amer. Fauna, 13:1-412.

Baker, S. 1978. Bibliography for the BLM, Las Cruces District Standard Habitat Study. New Mexico State University.

Bell, Scott C. 1978. Endangered Amphibians and Reptiles of Seven Southwestern New Mexico Counties. U.S. Dept. Interior, BLM, Las Cruces District Office, New Mexico.

Baker, William J., and David J. Scheldt. 1977. Terrestrial Mammals of the American Southwest in Big Bend National Park. In Importance, Preservation, and Management of Riparian Habitat: A Symposium. USDA, Forest Service, Gen. Tech. Rpt. RM-43. Tucson, Arizona, July 9. pp. 213-217.

Baker, S. M. 1973. Range Rodents and Plant Succession. Trans. N. American Wildlife Conference. pp. 123-124.

Baker, David S., Charles B. Low, and Janet F. Savelle. 1977. Southwestern Riparian Communities: Their Basic Importance and Management in Aridlands. In Importance, Preservation, and Management of Riparian Habitat: A Symposium. USDA, Forest Service, Gen. Tech. Rpt. RM-43. Tucson, Arizona, July 9. pp. 301-311.

Baker, S. M., and D. Anderson. 1963. Eagles, Hawks, and Falcons of The World. McGraw-Hill, N. Y., pp. 943.

Battaglini, L. C., and C. M. Herbel. 1963. Vegetational Changes on a Semi-Arid Grassland Range. Ecological Monographs. 33:123-164.

Bureau of Land Management. Las Cruces District Plant Species Inventory List.

Bureau of Land Management, Las Cruces District. 1974. Vegetation Inventory of The Caballo, Las Vegas, and Organ Planning Units. Range Survey Sheet, Form VI. Standard Unit Record For Size Control Data. Topographic Data, Species List, and Elevation Classification - 287.

Bureau of Land Management, Las Cruces District. 1974. Vegetation Inventory of The Caballo, Las Vegas, and Organ Planning Units. Range Survey Sheet, Form VI. Standard Unit Record For Vegetation Characterization.

Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Vegas, and Organ Planning Units. Range Survey Data of Rangeland Areas.

Bureau of Land Management, Las Cruces District. 1978. Animal Species Inventory of The Caballo, Las Vegas, and Organ Planning Units.

BIBLIOGRAPHY FOR THE S.M. LAS CRUCES  
DISTRICT STANDARD HABITAT STUDY



## BIBLIOGRAPHY

- Allen, J. 1978. District Conservationist. Soil Conservation Service. Las Cruces District. Personal Communication.
- Arnold, J. F., D. A. Jameson, and E. H. Reid. 1964. The Pinyon-Juniper Type of Arizona: Effects of Grazing, Fire, and Tree Control. USDA, Forest Service, Prod. Res. Rpt. No. 84. 28pp.
- Bailey, Vernon. 1931. Mammals of New Mexico. North Amer. Fauna, 53:1-412.
- Beck, R. 1978. Associate professor range management. New Mexico State University. Personal Communication.
- Belfit, Scott C. 1978. Endangered Amphibians and Reptiles of Seven Southwestern New Mexico Counties. U.S. Dept. Interior, BLM, Las Cruces District Office, New Mexico.
- Boeer, William J., and David J. Schmidly. 1977. Terrestrial Mammals of the Riparian Corridor in Big Bend National Park. In Importance, preservation, and Management of Riparian Habitat: A Symposium. USDA, Forest Service, Gen. Tech. Rpt. RM-43. Tucson, Arizona, July 9. pp. 212-217.
- Bond, R. M. 1975. Range Rodents and Plant Succession. Trans. N. American Wildlife Conference. pp. 229-234.
- Brown, David E., Charles H. Lowe, and Janet F. Hausler. 1977. Southwestern Riparian Communities: Their Biotic Importance and Management in Arizona. In Importance, Preservation, and Management of Riparian Habitat: A Symposium. USDA, Forest Service, Gen. Tech. Rpt. RM-43. Tucson, Arizona, July 9. pp. 201-211.
- Brown, L., and D. Amadon. 1968. Eagles, Hawks, and Falcons of The World. McGraw Hill, N. Y., pp. 945.
- Buffington, L. C., and C. H. Herbel. 1965. Vegetational Changes on a Semi-desert Grassland Range. Ecological Monographs. 35:139-164.
- Bureau of Land Management. Las Cruces District Plant Species Inventory List.
- Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Uvas, and Organ Planning Units. Range Survey Sheets, Form V1. Standard Unit Record For Site Control Data: Step-point Data, Species List, and Erosion Classification - SSF.
- Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Uvas, and Organ Planning Units. Range Survey Sheets, Form V2. Standard Unit Record For Vegetation Characterization.
- Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Uvas, and Organ Planning Units. Range Survey Data of Relic Areas.
- Bureau of Land Management, Las Cruces District. 1978. Animal Species Occurrence Data by Standard Habitat Site For The Caballo, Las Uvas, and Organ Planning Units.

# BIBLIOGRAPHY

- Allen, J. 1978. District Conservationist. Soil Conservation Service. Las Cruces District. Personal Communication.
- Arnold, J. F., R. A. Janssen, and E. R. Reid. 1964. The Pinyon-Juniper Type of Aridwood: Effects of Grazing, Fire, and Tree Control. USDA, Forest Service, Res. Rep. No. 84. 28pp.
- Bailey, Vernon. 1971. Mammals of New Mexico. North Amer. Fauna, 53:1-412.
- Bark, E. 1978. Associate professor range management. New Mexico State University. Personal Communication.
- Bell, Scott C. 1978. Endangered Amphibians and Reptiles of Seven Southwestern New Mexico Counties. U.S. Dept. Interior, RIM, Las Cruces District Office, New Mexico.
- Boser, William J., and David J. Schmidt. 1977. Terrestrial Mammals of the Riparian Corridor in Big Bend National Park. In Importance, Preservation, and Management of Riparian Habitats: A Symposium. USDA, Forest Service, Gen. Tech. Rep. RM-43. Tucson, Arizona, July 9. pp. 212-217.
- Bond, E. M. 1973. Range Rodents and Plant Succession. Trans. N. American Wildlife Conference. pp. 129-134.
- Brown, David E., Charles R. Lowe, and James F. Haveler. 1977. Southwestern Riparian Communities: Their Biotic Importance and Management in Arizona. In Importance, Preservation, and Management of Riparian Habitats: A Symposium. USDA, Forest Service, Gen. Tech. Rep. RM-43. Tucson, Arizona, July 9. pp. 201-211.
- Brown, L., and D. Anderson. 1968. Eagles, Hawks, and Falcons of the World. McGraw Hill, N. Y., pp. 645.
- Bullington, L. C., and C. H. Herbel. 1965. Vegetational Changes on a Semi-desert Grassland Range. Ecological Monographs. 35:159-164.
- Bureau of Land Management. Las Cruces District Plant Species Inventory List.
- Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Uvas, and Organ Planning Units. Range Survey Sheets, Form VI. Standard Unit Record for Site Control Data: Step-point Data, Species List, and Erosion Classification - 227.
- Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Uvas, and Organ Planning Units. Range Survey Sheets, Form VI. Standard Unit Record for Vegetation Characterization.
- Bureau of Land Management, Las Cruces District. 1978. Vegetation Inventory of The Caballo, Las Uvas, and Organ Planning Units. Range Survey Data of Radio Areas.
- Bureau of Land Management, Las Cruces District. 1978. Animal Species Occurrence Data by Standard Habitat Site for The Caballo, Las Uvas, and Organ Planning Units.



- Gardner, J. L. 1951. Vegetation of The Creosotebush Area of The Rio Grande Valley in New Mexico. Ecological Monographs. 21:379-403.
- Giles, Robert H., (ed). 1969. Wildlife Management Techniques. The Wildlife Society, Washington, D. C. pp. 623.
- Gould, F. W. 1951. Grasses of Southwestern United States. The University of Arizona Press, Tucson, Arizona. pp. 343.
- Graul, W. E., J. Torres, and R. Denny. 1976. A Species-Ecosystem Approach For Nongame Programs. Wildlife Society Bull. 4(2):79-80.
- Hall, E. R., and K. R. Kelson. 1958. The Mammals of North America. Ronald Press, N. Y., 2 vols.
- Hubbard, J. P. 1970. Checklist of The Birds of New Mexico. N. M. Ornith. Soc. Publ. No. 3.
- Hubbard, J. P. 1977. A Biological Inventory of The Animas Mountains, Hidalgo County, New Mexico. New Mexico Dept. Game and Fish, Santa Fe.
- Humphrey, Robert R. 1958. The Desert Grassland. University of Arizona Press, Tucson. pp. 74.
- Hungerford, Charles Roger. 1960. The Factors Affecting the Breeding of Gambel's Quail Lophortyx Gambelii Gambelii Gambel in Arizona. Ph.D. dissertation, University of Arizona, Tucson. pp. 94.
- Johnsgard, Paul A. 1973. Grouse and Quails of North America. University of Nebraska Press, Lincoln. pp. 553.
- Johnson, R. Roy, Lois T. Haight, and James M. Simpson. 1977. Endangered Species vs. Endangered Habitats: A Concept. In Importance, Preservation, and Management of Riparian Habitat: A Symposium. USDA, Forest Service, Gen. Tech. Rpt. RM-43. Tucson, Arizona, July 9. pp. 68-79.
- Kearney, T. H., and R. H. Peebles. 1951. Arizona Flora. University of California Press, Berkely and Los Angeles. pp. 1032.
- Kundaeli, J. N., and H. G. Reynolds. 1972. Desert Cottontail Use of Natural and Modified Pinyon-Juniper Woodland. J. Range Mgmt. 25:116-118.
- Lamb, Samuel H. 1971. Woody Plants of New Mexico and Their Value To Wildlife. Bull. No. 14, N.M. Dept. Game and Fish, Santa Fe. pp. 80.
- Lehman, V. W., and H. Ward. 1941. Some Plants Valuable to Quail in South-West Texas. J. Wildl. Mgmt. 5(2):131-135.
- Lewis, T. H. 1950. The Herpetofauna of The Tularosa Basin and Organ Mountains of New Mexico With Notes On Some Ecological Features Of The Chihuahuan Desert. Herpetologica 6(1):1-10.
- Ligon, J. S. 1961. New Mexico Birds and Where To Find Them. Univ. of New Mexico Press, Albuquerque. pp. 360.

- Carson, J. L. 1951. Vegetation of the Granddunes area of the Rio Grande Valley in New Mexico. *Ecological Monographs*, 21:129-143.
- Gilman, Robert W., (ed). 1968. Wildlife Management Techniques. The Wildlife Society, Washington, D. C. pp. 421.
- Goeld, F. W. 1951. Grasses of Southwestern United States. The University of Arizona Press, Tucson, Arizona. pp. 361.
- Grant, W. E., J. Torres, and R. Henry. 1978. A Species-Inventory Approach for Nongame Programs. Wildlife Society Bull. 4(1):79-80.
- Hall, E. W., and H. H. Nelson. 1958. The Mammals of North America. Ronald Press, N. Y. 2 vols.
- Hobbs, J. P. 1970. Checklist of the Birds of New Mexico. N. M. Ornith. Soc. Publ. No. 1.
- Hobbs, J. P. 1977. A Biological Inventory of the Antelope Mountains, Hildes County, New Mexico. New Mexico Dept. Game and Fish, Santa Fe.
- Humphrey, Robert E. 1958. The Desert Grassland. University of Arizona Press, Tucson. pp. 74.
- Hunterford, Charles Roger. 1960. The Factors Affecting the Breeding of Gambel's Quail *Lophortyx gambelii* Gambel in Arizona. Ph.D. Dissertation, University of Arizona, Tucson. pp. 94.
- Johnsgard, Paul A. 1973. Grasses and Quails of North America. University of Nebraska Press, Lincoln. pp. 221.
- Johnson, R. Roy, John T. Baigert, and James M. Simpson. 1977. Endangered Species vs. Endangered Habitats: A Concept. In *Importance, Preservation, and Management of Riparian Habitats: A Symposium*. USDA, Forest Service, Gen. Tech. Rpt. RM-43. Tucson, Arizona, July 8. pp. 68-78.
- Kearney, T. H., and E. H. Peckham. 1951. Arizona Flora. University of California Press, Berkeley and Los Angeles. pp. 1031.
- Kushlan, J. A., and H. C. Raymundo. 1973. Desert Contrasts: Use of Natural and Modified Pinon-Juniper Woodland. J. Range Mgmt. 25:118-119.
- Lamb, Samuel E. 1977. Woody Plants of New Mexico and Their Value to Wildlife. Bull. No. 14. N.M. Dept. Game and Fish, Santa Fe. pp. 80.
- Lehman, V. W., and W. Ward. 1961. Some Plants Valuable to Quail in South-West Texas. J. Wildl. Mgmt. 25(1):131-132.
- Lewis, T. M. 1950. The Barro Colorado of the Tularosa Basin and Organ Mountains of New Mexico With Notes on Some Ecological Features of the Chinaman Desert. *Herpetologica* 6(1):1-10.
- Ligon, J. S. 1961. New Mexico Birds and Where to Find Them. Univ. of New Mexico Press, Albuquerque. pp. 360.



- Lowe, C. H. 1955. The Eastern Limit of The Sonoran Desert in The U. S. With Additions To The Known Herptofauna of New Mexico. Ecology 36(2): 343-345.
- Lowe, C. H. (ed.). 1964. The Vertebrates of Arizona. Univ. of Arizona Press, Tucson. pp. 66.
- Lowe, C. H., and D. E. Brown. 1973. The Natural Vegetation of Arizona. Arizona Game and Fish Dept., Phoenix. pp. 53.
- Martin, Alexander C., Herbert S. Zim, and Arnold L. Nelson. 1951. American Wildlife and Plants: a Guide to Wildlife Food Habits. Dover Pub., Inc., N. Y. pp. 500.
- McColloch, Clay Y. 1973. Control of Pinyon-Juniper As a Deer Management Measure In Arizona. Proj. No. W-78-R. Arizona Game and Fish Dept., Phoenix. pp. 32.
- McCormick, Dale P. 1975. Effect of Mesquite Control on Small Game Populations. M. S. thesis, Univ. of Arizona, Tucson. pp. 66.
- New Mexico Department of Game and Fish. 1967. New Mexico Wildlife Management. N. M. Dept. Game and Fish, Santa Fe. pp. 250.
- New Mexico Interagency Range Committee. 1978. Potential Natural Vegetation of New Mexico.
- Norris, J. J. 1950. The Effect of Rodents, Rabbits, and Cattle on Two Vegetation Types in Semi-Desert Range Land. New Mexico Agr. Exp. Stn., Bull. 353. pp. 34.
- O'Connor, Jack, and George G. Goodwin. 1961. The Big Game Animals of North America. E. P. Dutton and Co., Inc., N. Y. pp. 263.
- Odum, E. P. 1959. Fundamentals of Ecology. W. B. Saunders Co., Philadelphia. pp. 546.
- Ousting, H. J. 1956. The Study of Plant Communities. W. H. Freedman & Co., San Francisco. pp. 440.
- Peterson, Roger Tory, and Edward L. Chalif. 1973. A Field Guide to Mexican Birds. Houghton Mifflin Co., Boston. pp. 298.
- Phillips, A. R., J. Marshall, and G. Monson. 1964. The Birds of Arizona. Univ. of Arizona Press, Tucson. pp. 212.
- Raitt, R. J., and S. L. Pimm. 1974. Temporal Changes in Northern Chihuahuan Desert Bird Communities. In Proceedings of The Symposium on The Biological Resources of The Chihuahuan Desert Region, U. S. and Mexico. Sul Ross State Univ., Alpine, Texas, October 16-18.
- Reynolds, H. G., and G. E. Glendening. 1950. Relation of Kangaroo Rats to Range Vegetation in Southern Arizona. Ecology 31:456-463.

Lewis, C. H. 1955. The Eastern Limit of the Sonoran Desert in the U. S. with additions to the known herpetofauna of New Mexico. *Ecology* 36(1): 143-145.

Lewis, C. H. (ed.). 1964. The Vegetation of Arizona. Univ. of Arizona Press, Tucson. pp. 58.

Lewis, C. H., and E. E. Brown. 1975. The Natural Vegetation of Arizona. Arizona Game and Fish Dept., Phoenix. pp. 51.

Martin, Alexander E., Herbert S. Lim, and Arnold L. Nelson. 1951. American Wildlife and Plants: a Guide to Wildlife-Feeding Habits. Dover Pub., Inc. N. Y. pp. 300.

McCulloch, Clay V. 1973. Control of Pinon-Juniper as a Deer Management Measure in Arizona. Proj. No. W-75-R. Arizona Game and Fish Dept., Phoenix. pp. 15.

McGinnis, Dale P. 1975. Effect of Mesquite Control on Small Game Populations. M. S. thesis, Univ. of Arizona, Tucson. pp. 66.

New Mexico Department of Game and Fish. 1967. New Mexico Wildlife Management. N. M. Dept. Game and Fish, Santa Fe. pp. 110.

New Mexico Interagency Range Committee. 1978. Potential Natural Vegetation of New Mexico.

Norris, J. J. 1950. The Effect of Badlands, Ebbetts, and Cattle on Two Vegetation Types in Semi-Desert Range Land. New Mexico Agr. Exp. Sta., Bull. 377. pp. 34.

O'Connor, Jack, and George C. Goodwin. 1961. The Big Game Animals of North America. E. P. Dutton and Co., Inc., N. Y. pp. 161.

Olum, E. P. 1959. Fundamentals of Ecology. W. B. Saunders Co., Philadelphia. pp. 268.

Quasthoff, E. J. 1956. The Study of Plant Communities. W. H. Freeman & Co., San Francisco. pp. 440.

Robertson, Roger Terry, and Edward J. Chaffin. 1977. A Field Guide to Mexican Birds. Wadsworth Publishing Co., Boston. pp. 298.

Robinson, A. R., J. Marshall, and G. Monson. 1964. The Birds of Arizona. Univ. of Arizona Press, Tucson. pp. 212.

Saunders, E. J., and S. L. Pimm. 1974. Temporal Changes in Northern Chihuahuan Desert Bird Communities. In Proceedings of the Symposium on the Biological Resources of the Chihuahuan Desert Region, U. S. and Mexico. Sul Ross State Univ., Alpine, Texas, October 15-18.

Schubert, H. G., and G. E. Giesbrecht. 1950. Relation of Landscape Data to Range Vegetation in Southern Arizona. *Ecology* 31:55-63.



- Robbins, Chandler S., Bertel Brunn, and Herbert S. Zim. 1966. Birds of North America. Golden Press, N. Y. pp. 340.
- Russo, John P. 1956. The Desert Bighorn Sheep in Arizona. Proj. W-55-R. Arizona Game and Fish Dept., Phoenix. pp. 153.
- Sanderson, Glen C., (ed). 1977. Management of Migratory Shore and Game Birds in North America. U. S. Dept. of Interior, Fish and Wildl. Serv., U. S. Govt. Printing Office, Wash., D. C. pp. 358.
- Schickendanz, J. 1978. Range Management Specialist, Cooperative Extension Service, New Mexico State University. Personal Communication.
- Schmutz, E. M. 1978. Professor Range Management. University of Arizona. Personal Communication.
- Snyder, Noel F. R., and Helen A. Snyder. 1975. Raptors in Range Management. In Proceedings Symposium on Management of Forest and Range Habitats For Non-Game Birds. USDA, Forest Serv., Gen. Tech. Rpt. WO-1, Tucson, Arizona, May 6-9. pp. 190-209.
- Snyder, W. D. 1967. Experimental Habitat Improvement For Scaled Quail. Colorado Div. of Wildl. Tech. Bull. No. 19. pp. 63.
- Soil Conservation Service. Las Cruces District. 1977. Range Site Descriptions. Section IIE, Technical Guide.
- Springfield, H. W. 1976. Characteristics and Management of Southwestern Pinyon-Juniper Ranges. USDA, Forest Service Research Paper RM-160. PP. 32.
- Stebbins, Robert C. 1954. Amphibians and Reptiles of Western North America. McGraw Hill Book Co., Inc., N. Y. pp. 536.
- Stebbins, Robert C. 1966. A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Co., Boston. pp. 279.
- Stefferd, Alfred, (ed.). 1966. Birds in Our Lives. U. S. Dept. Interior, Fish and Wildl. Serv., U. S. Govt. Printing Office, Wash., D. C. pp. 561.
- U.S.D.A., Forest Service. 1978. Run Wild: A Storage and Retrieval System For Wildlife Habitat Information. A Computer program maintained at Fort Collins in Cooperation with Colorado State University.
- Walker, Ernest P. 1968. Mammals of The World. Vols. I and II. Johns Hopkins Press, Baltimore. pp. 1500.
- Wauer, Roland H. 1977. Significance of Rio Grande Riparian Systems Upon The Avifauna. In Importance, Preservation, and Management of Riparian Habitat: a Symposium. USDA, Forest Serv., Gen. Tech. Rpt. RM-43, Tucson, Arizona, July 9. pp. 165-174.

- Robinson, Charles E., Bertel Brown, and Herbert S. Elm. 1966. Birds of North America. Golden Press, N. Y. pp. 140.
- Russell, John P. 1956. The Desert Bighorn Sheep in Arizona. Proj. W-55-8. Arizona Game and Fish Dept., Phoenix. pp. 122.
- Sanderson, Glen C., (ed.). 1977. Management of Migratory Birds and Game Birds in North America. U. S. Dept. of Interior, Fish and Wildlife Serv., U. S. Govt. Printing Office, Wash., D. C. pp. 328.
- Schickelshahn, J. 1976. Range Management Specialist, Cooperative Extension Service, New Mexico State University. Personal Communication.
- Schultz, E. M. 1978. Professor Range Management, University of Arizona. Personal Communication.
- Snyder, Noel F. R., and Helen A. Snyder. 1972. Raptors in Range Management. In Proceedings Symposium on Management of Forest and Range Habitats for Non-Game Birds. USDA, Forest Serv., Gen. Tech. Rep. WO-1, Tucson, Arizona, May 6-9. pp. 190-192.
- Snyder, W. D. 1967. Experimental Habitat Improvement for Scaled Quail. Colorado Div. of Wildlife Tech. Bull. No. 12. pp. 61.
- Soil Conservation Service. Las Cruces District. 1977. Range Side Description. Section 112, Technical Guide.
- Springfield, R. W. 1976. Characteristics and Management of Southwestern Pinyon-Juniper Ranges. USDA, Forest Service Research Paper RM-160. 57. 22.
- Stebbins, Robert C. 1954. Amphibians and Reptiles of Western North America. McGraw Hill Book Co., Inc., N. Y. pp. 336.
- Stebbins, Robert C. 1966. A Field Guide to Western Reptiles and Amphibians. Houghton Mifflin Co., Boston. pp. 179.
- Stellard, Alfred. (ed.). 1966. Birds in Our Lives. U. S. Dept. Interior, Fish and Wildlife Serv., U. S. Govt. Printing Office, Wash., D. C. pp. 261.
- U.S.D.A., Forest Service. 1978. Run Wild: A Strategy and Management System for Wildlife Habitat Information. A Computer program maintained at Fort Collins in Cooperation with Colorado State University.
- Walker, Ernest P. 1958. Mammals of the World. Vols. I and II. Johns Hopkins Press, Baltimore. pp. 1300.
- Wauer, Roland H. 1977. Significance of the Grand Staircase-Escalante System. In Importance, Preservation, and Management of Riparian Habitats: a Symposium. USDA, Forest Serv., Gen. Tech. Rep. RM-41. Tucson, Arizona, July 9. pp. 165-174.



Wiens, John A., and Melvin I. Dyer. 1975. Rangeland Avifaunas: Their Composition, Energetics, and Role in The Ecosystem. In Proceedings of The Symposium on Management of Forest and Range Habitats For Non-Game Birds. USDA, Forest Serv., Gen. Tech. Rpt. WO-1, Tucson, Arizona, May 6-9. pp. 146-182.

Wood, J. E. 1969. Rodent Populations and Their Impact on Desert Rangelands. New Mexico State Univ., Ag. Exp. Stn., Tech. Bull. 555:1-17.

Wright, A. H., and A. A. Wright. 1957. Handbook of Snakes of The U. S. and Canada. Comstock Pub. Assoc., Ithaca, N. Y. pp. 1105.

Woods, J. E., and Melvin I. Over. 1973. Range Land Assessment: Their Use-  
fulness, Effectiveness, and Role in the Ecosystem. In Proceedings of the  
Symposium on Management of Forest and Range Habitats for Non-Game Birds.  
USDA Forest Serv., Gen. Tech. Rep. WO-1, Tucson, Arizona, May 8-9.  
pp. 1-5-151.

Woods, J. E. 1969. Robert Populations and Their Impact on Desert Rangelands.  
New Mexico State Univ., Ag. Exp. Sta., Tech. Bull. 555:1-17.

Wright, A. H., and A. A. Wright. 1957. Handbook of Snakes of the U. S.  
and Canada. Comstock Pub. Assoc., Ithaca, N. Y. pp. 1103.

BLM LIBRARY  
RS 150A BLDG. 50  
DENVER FEDERAL CENTER  
P.O. BOX 25047  
DENVER, CO 80225